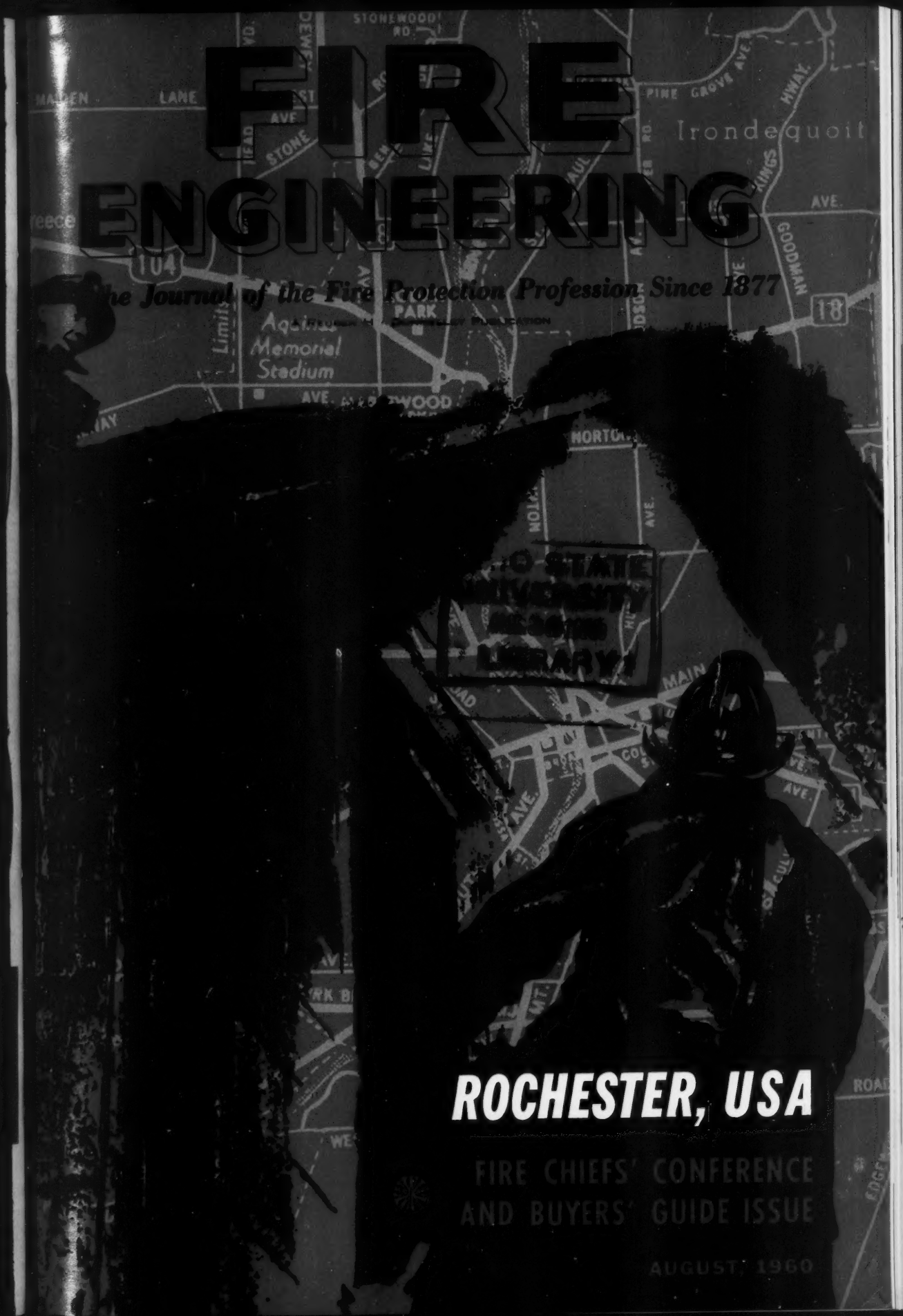
FIRE
ENGINEERING
The Journal of the Fire Protection Profession Since 1877
ROCHESTER, USA
FIRE CHIEFS' CONFERENCE
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AUGUST, 1960

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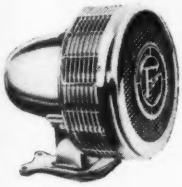
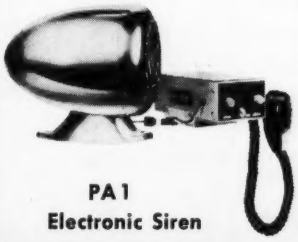


Powerful Class "Q" Siren

Super Beacon Ray Light



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3T-22 Fire Alarm-CD Siren

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FIRE ENGINEERING

VOL. 113 AUGUST, 1960 NO. 8

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PREMIUM CUSTOM

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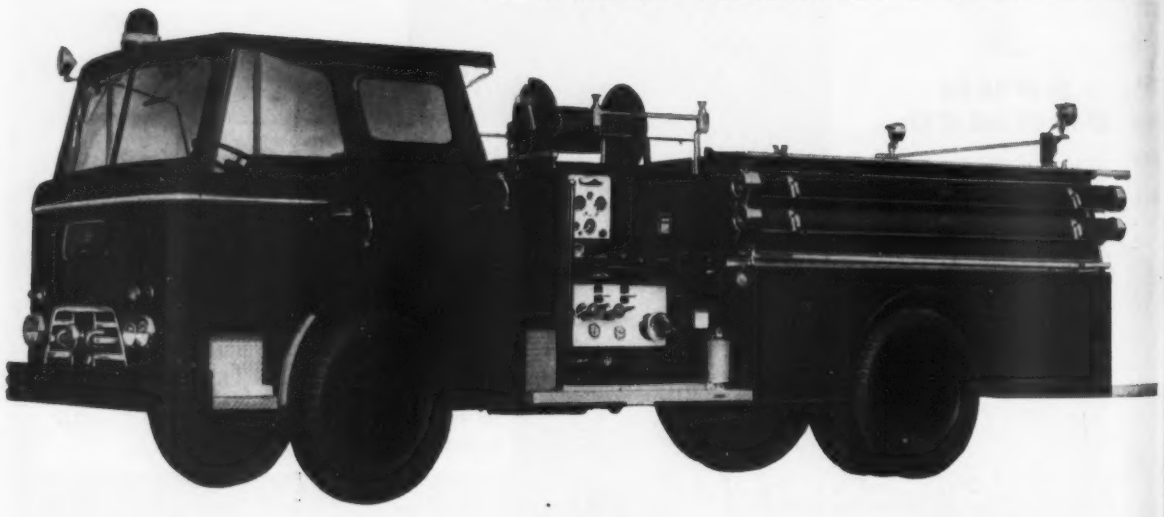
The Ward LaFrance PREMIUM CUSTOM is designed and engineered from the tire treads up to the beacon light for just one specific purpose—to give you the best fire-fighting machine in the world. Our response to a growing demand for custom-tailored trucks at a commercial-truck price comes with the creation of the PREMIUM CUSTOM. Long years of engineering experience and modern production techniques combined with an acute awareness of the varied needs of different communities have made it possible. A wide range of completely-engineered, interchangeable options can now be quickly adapted to meet every fire-fighting requirement. And delivery time is considerably shortened.

16 PREMIUM CUSTOM MODELS TO CHOOSE FROM



- Shortest overall length—288"
- Shortest overall turning radius—less than 27 ft.
- Shortest wheelbase—150"
- Shortest wheel-turning radius—24 ft.
- Shortest front overhang—56"

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New B.F.Goodrich Diamond hose has all-Dacron jacket that outwears all others, is never weakened by mildew

ONLY a hose that's terrifically light and flexible could be twisted into such a tight knot! An all-Dacron jacket makes this new B.F.Goodrich Diamond fire hose light weight, easy to handle; yet so tough it will give far longer service than any other type of hose.

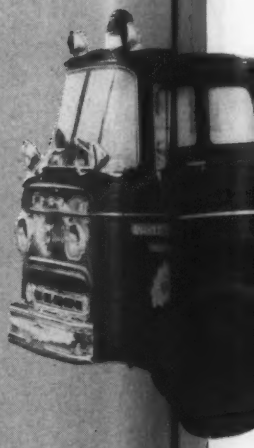
B.F.Goodrich has tightly woven Dacron fibers into a hose jacket so strong that abrasion tests show it will outwear ordinary cotton-jacketed hose many times over. It resists snagging. Mildew has no effect on it. Oils, greases and most chemicals can't hurt it. And it absorbs far less water, which means that it stays light and flexible, dries faster, is less likely to freeze in cold weather.

Plylock end protection (an extra layer of hard-woven cords extending 12" from the coupling) adds 100% more strength to the coupling area. A special rubber compound used for the tube stays elastic and tough throughout the life of the hose. Coupling has Koroseal swivel gaskets that seal with hand tightening, never have to be replaced.

If you're looking for the best buy in hose, get B.F.Goodrich Diamond hose with all these quality features. It may cost more to begin with, but will actually cost you less in the long run. Your B.F.Goodrich distributor can tell you more about it. *B.F.Goodrich Industrial Products Company, Dept. M-880, Akron 18, Ohio.*

FIRE HOSE BY B.F.Goodrich

John BEAN BUILDS THEM BETTER TO



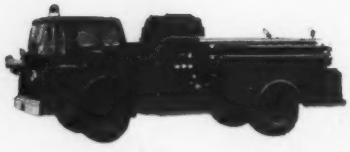
Designed, tested and built for superior performance, John Bean Firefighters have proven their dependability in community service the world over. Engineering "know how", based upon decades of experience, insures rigid quality standards in every unit. Famous Bean pumps exemplify John Bean dependability. The efficient, high pressure pump is unmatched for true, high pressure fog fire fighting. The Class A centrifugal volume pump meets every performance standard of N.B.F.U. tests. Depend on John Bean Firefighters—built better to meet your needs best.

FEATURING ORIGINAL HIGH PRESSURE FOG

John Bean original high pressure fog is a scientific, proven fire fighting method distinguished from all other types. Operating at 850 psi, the rugged John Bean pump produces microscopic fog particles discharged from the patented Bean Fog Gun. Driven at high velocity to the base of the fire, these particles have many times the surface area and heat absorption power of a low pressure stream. So much so that one gallon of water as high pressure fog has the fire killing power of ten or more gallons discharged in a volume stream.

SQUAD AND RESCUE UNIT

High pressure fog fire fighter specially designed for rescue. Ample storage capacity with spacious, weatherproof compartments. 500-gal. water tank.



HPF* FIRE FIGHTER

Ideal for rural fire protection where water supply is limited. Equipped with original high pressure fog*. Full, 500-gal. water tank; compartmentized body.

CLASS "A" TRIPLE COMBINATION PUMPER

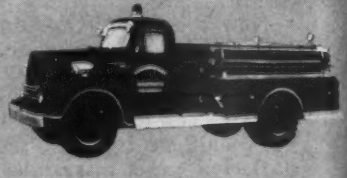
Triple combination pumper with Class A centrifugal volume pump for 500, 600 and 750 gpm performance. Forward control chassis with compartmentized body.

MODEL 400-F

Specially designed for small towns, resort areas, and western range patrols. High pressure fog equipped with two, 200-ft. hose reels; 400-gal. water tank.

MODEL 250-F

Compact, fast and mobile. Fights brush, grass and forest fires on the run with high pressure fog. Compartmentized body; 250-gal. water tank.



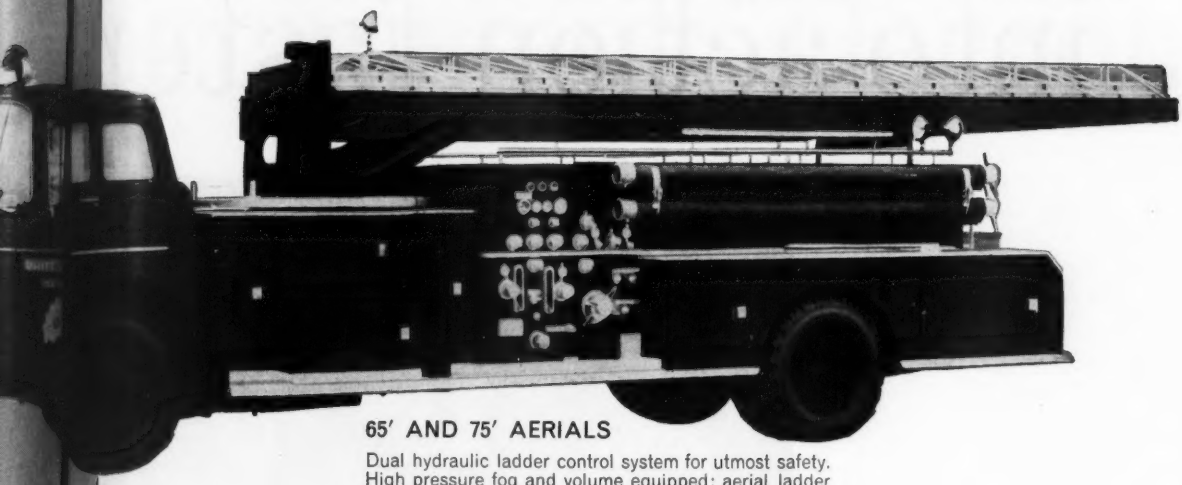
FIRE TANKER

Available with 500, 600, 750 and 1000 gal. tanks. Plenty of storage space in the modern, compartmentized body.

***HPF — High Pressure Fog**
HPV — High Pressure Fog-Volume (Combination)

for proof of John BEAN Firefighter effectiveness, write today for

TO MEET YOUR NEEDS BEST!

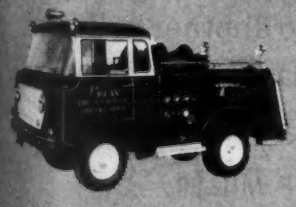


65′ AND 75′ AERIALS

Dual hydraulic ladder control system for utmost safety. High pressure fog and volume equipped; aerial ladder available in all steel or with steel base and aluminum sections. Hydraulically operated 360° turntable and hydraulic outrigger jacks.

HPV® FIRE FIGHTER

Forward control chassis; 500, 600 and 750 gpm volume capacities plus high pressure fog; compartmentized body; 1600-ft. capacity hose bed; 500-gal. water tank.



MODEL 200-F

Mounted on forward control, Willys "Jeep" chassis with 4-wheel drive. High pressure fog; big hose bed; 200-gal. water tank.

a demonstration in your community

INDUSTRIAL FIRE FIGHTERS

Compact, true high pressure fog fire apparatus for in-plant protection. Designed for tight maneuvering through factory aisles; 200-gal. water tank.

John BEAN®

DIVISION OF
FOOD MACHINERY AND CHEMICAL CORPORATION
LANSING, MICHIGAN • SAN JOSE, CALIFORNIA

fmc®

These men can get into action faster

Here's what they say about hose jacketed entirely with "Dacron":

"We can pack more hose on the trucks . . . and can repack it wet and move out to another call fast. Fire hose of 'Dacron' is lighter and more flexible, too."

CHIEF MILLER,
Madison Fire Department, Illinois

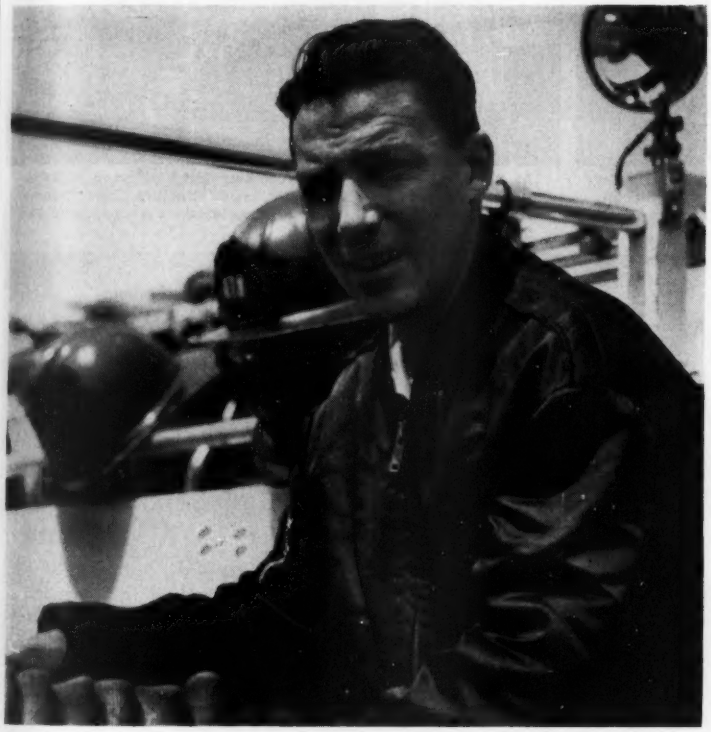
Speed's the thing in a fire. Fire spreads fast. Fire must be controlled fast. And hose jacketed 100% with "Dacron"* polyester fiber can often save you those extra critical seconds.

This is why you'll find hose of "Dacron" in more and more fire houses throughout the country. These departments have discovered the same things as the men above:

- You can save precious minutes. Hose of "Dacron" is light, easy to handle and maneuver.

their fire hose because of "Dacron"®

POLYESTER FIBER



"Feeds off the truck fast. Doesn't slow us down once it's on the ground, because hose jacketed 100% with 'Dacron' is lighter and easier to maneuver."

CAPTAIN DUNLEAVY,
Belleville Fire Department, New Jersey

- You're *always* ready for another fire. Hose of "Dacron" can be repacked wet . . . *can't* be damaged by rot or mildew.
- You get extra economy, too. Hose of "Dacron" stands up under rough abrasion, oils and chemicals; gives you many years of dependable service.

See your supplier . . . or write for nearby sources and free booklet on "The Hose That Needs No Drying". E. I. du Pont de Nemours & Co. (Inc.), Textile Fibers Dept., Room 31E, Wilmington 98, Del.

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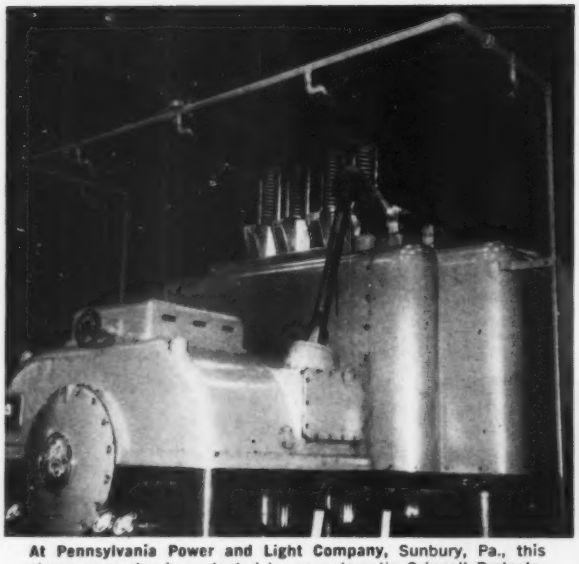
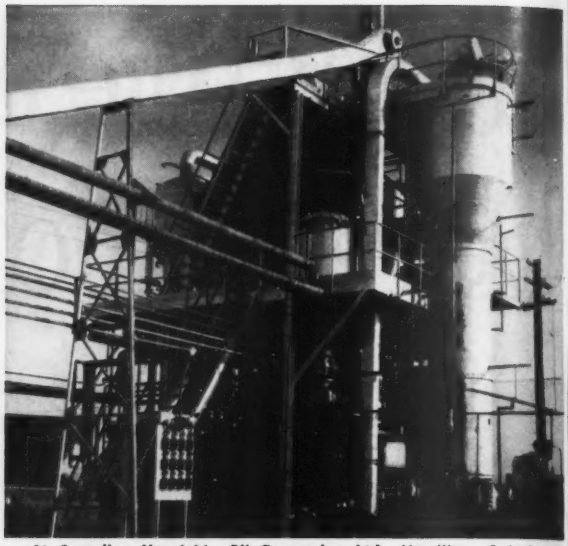


At Pennsylvania Power and Light Company, Sunbury, Pa., this steam generator is protected by an automatic Grinnell Protecto-Spray system in the event of outside fires and by a Dry Chemical system inside the casing.



At Canadian Vegetable Oil Processing Ltd., Hamilton, Ontario, Grinnell ProtectoSpray safeguards upper structure of this hexane solvent extraction unit, while a ProtectoFoam system guards the lower section.

At the RCAF supply depot at Namao, Alberta, this infrared drying oven is protected by a Dry Chemical system engineered by Grinnell to protect against possible fire resulting from ignition of flammable vapor mixtures.

At Dresser Industries, Inc., Dallas, Texas, hot metal temporarily ignites resulting vapors as metal is being submerged. If fire should get out of control, a Grinnell-installed Carbon Dioxide system is on guard to extinguish it quickly.

You can rely on Grinnell for the right protection against destruction by fire!

Grinnell has had 90 years experience in devising fire protection systems for all kinds of fire hazards — systems which can be relied on to protect the continuity of business and to safeguard dollars invested. Grinnell offers quality-controlled manufacturing, layouts by experienced engineers, and installations by skilled crews. Let Grinnell engineers help you select the right system.

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However, before you draw up specifications it will pay you to check and compare, for example, a DARLEY CHAMPION PUMPER on a modern, tilt-forward, cab-over-engine chassis by Ford as illustrated, or on an International chassis with the same features.

DARLEY CHAMPION price tags will please you.

Engineered with short wheelbase for tight turning circle, easy steering, quick maneuverability, maximum visibility for safety.

Engines of ample power synchronized to Darley Centrifugal Pumps with high efficiency because of superior hydraulic engineering design.

Class A Pumpers ranging to 1250 GPM capacities with high pressure fog. Commercial chassis or complete custom apparatus.

Darley manufactures both Fire Apparatus and Fire Pumps—therefore you receive greater values at lower prices. PLUS a lifetime pump guarantee which you get ONLY from Darley.

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CHICAGO 12

Get the low-down on these—CHRISTOPHER

Rescue Squads—fast growing—fast moving—demanding the best of rescue equipment in their benevolent business of saving life.

These CHRISTOPHER COMBINATIONS are for you! They match the tempo—the speed of Rescue Squads. Their basic design is engineered with you in mind. There are 20 compartments for all manner of rescue equipment. They carry 12 men as well as stretcher patients. Greater headroom—rear opening model has 5-man fully enclosed cab. Our engineers follow your suggestions and furnish blueprints for your complete satisfaction. Equipment can include flood lights, oxy-acetylene torch, resuscitators, oxygen equipment, generator (5KW), portable pump, 2-way radio, loud-speaker, hydraulic rescue kit (20 ton), cable reels, gas masks, line throwing gun, gasoline chain saws, salvage covers, extinguishers and full complement of tools, ropes, hose, winch, etc. Built for true ambulance comfort with rescue truck ruggedness.

Fire companies that can use the world's most versatile apparatus will find in CHRISTOPHER COMBINATIONS the answer to long-felt needs of the fire service. Every unit is designed and built to your own company's specific requirements—blueprinted and completely laid out for your approval before the job is started. Any chassis you choose, any pump you choose, stainless steel foam tank with proportioner discharging 6,000 gals. foam compound, 200 feet of 1½" hose, two 8 foot lengths of hard suction, booster reels with 250 feet of ¾" high pressure hose, discharging both sides

You're ready for any emergency with—CHRISTOPHER

COMBINATIONS—*most flexible in the Field!*

thru 2½" x 1½" lines. Rear booster for use with 200 gal. water tank or for hydrant or drafting from ponds. Compartments for all type of Rescue equipment. (See Equipment Listed on Opposite Page.)

Let us send you photos and further information on the CHRISTOPHER COMBINATION—the world's most versatile, hard hitting fire truck and rescue car.

JOIN THE GROWING LIST OF SATISFIED USERS — SUCH AS — *Gordon Heights, New York; Cornwells Heights, Pa.; Conshohocken, Pa.; Lansdowne, Pa.; Oakmont, Pa.; Export, Pa.; Sunbury, Pa.; Manassas, Va.; West Bend, Wis.; Lincoln Park, Mich.; Ossining, New York; Albuquerque, N. M.; Denver, Colo.; Englewood, N. J.; Jersey City, N. J.; Ethiopian Imperial High Command, Addis Ababa, Ethiopia; Petrobras, Bahia, Brazil; Petroquimica, Caracas, Venezuela; The Army—Caracas, Venezuela; Baton Rouge, La.; Weirton, W. Va.; Fairfield, Conn., etc.*

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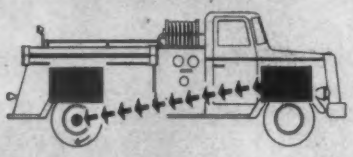
The big FWD difference is in the chassis Any pumper or aerial can have almost any trim or fire-fighting equipment hung on it. But only FWD, the originator of the four wheel drive principal, has true multi-wheel drive for the safest control on any kind of roadway... in any kind of weather or traffic condition. You won't appreciate this fully until you ride and drive an FWD. Ask our fire specialist to arrange for it. FWD CORPORATION • CLINTONVILLE, WISCONSIN • CANADIAN FACTORY • KITCHENER, ONTARIO.

Be sure to visit the FWD booth while attending the IAFC convention.

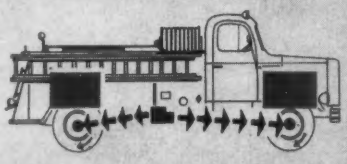
ORDINARY 2-WHEEL DRIVE



Spins easily because it is over-powered.

Drifts without power—may lock and be pushed into skids.

FWD FOUR WHEEL DRIVE



Less spin because power matches weight.

Power prevents locking and skidding—holds on turns, steers easily.

FWD CORPORATION

F-5

WW-6

F'N'A

Battery-Pack

DB-2

RAD

J-24

AG-23

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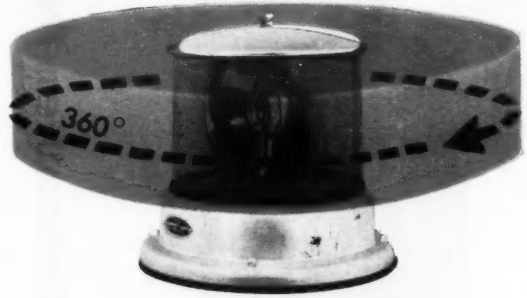
INSIST ON THESE **BIG LIGHTS** *for the job of Clearing the way . . . and Fast!*



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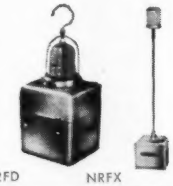
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Revolving high-speed beacon with the power you need for today's dangerous runs. Types and sizes for all voltages and vehicles. Ask for special RAR "Descriptive Sheet".

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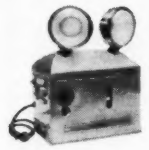
RHD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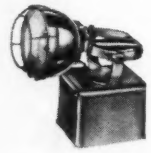
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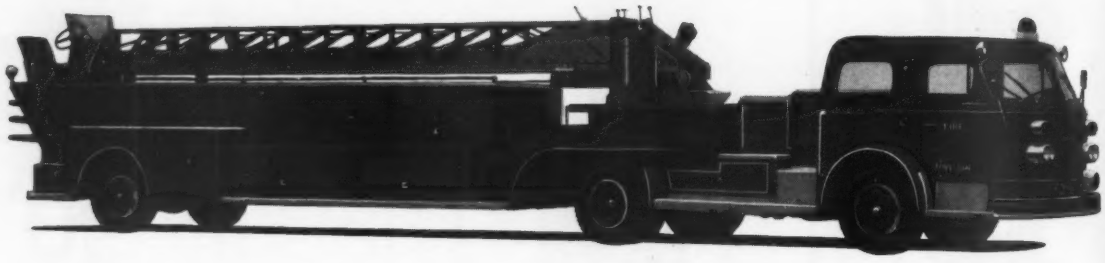
TNT

AMERICAN LAFRANCE

TURBINE ENGINES NOW AVAILABLE IN



Turbine powered Seattle Aerial truck
with 100 ft. All-Steel Ladder

For Smoother Performance,

Fire Chief William Fitzgerald and officials of the City of Seattle, Wash. have the honor of ordering the world's first production turbine engine powered automotive vehicle. This vehicle is a new American LaFrance aerial truck with 100 ft. all steel aerial ladder and will be powered by a Boeing 325 B.H.P. turbine engine.

Turbine engines for automotive use have been under development for approximately 15 years. Many installations have been made to proof test the designs before offering the turbine engine for automotive production.

The turbine engine offers many advantages over the piston type engine of comparable power. Some of these advantages are:

1. **Lightweight — approximately 10% of the piston engine installation.**
2. **Not sensitive to type of fuel used.**
3. **Better acceleration and hill climbing ability.**
4. **Elimination of engine cooling system.**
5. **Fast starting, no choking, full power in 10 seconds. No warm-up required at temperatures as low as 25° below zero.**
6. **Reduced maintenance due to simplicity and absence of reciprocating parts.**

The Seattle aerial truck, in addition to the aerial ladder, will carry a complete complement of ground ladders. A special feature will be complete enclosed protection for all rescue and fire fighting equipment in waterproof compartments.

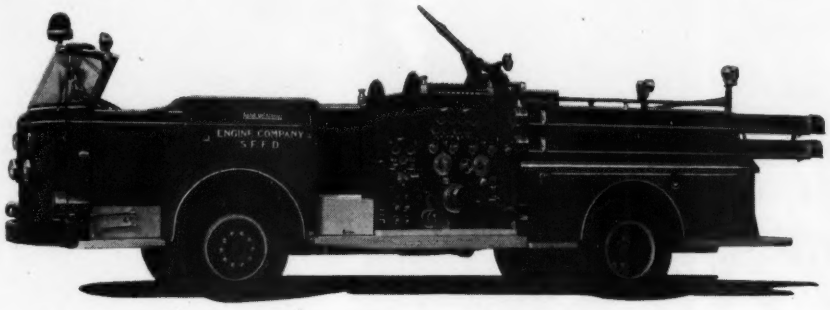
● See the engineered
Turbine engine powered
San Francisco pumper on display.

I.A.F.C. CONFERENCE
ROCHESTER, NEW YORK
SEPT. 12-15, 1960
DISPLAY SPACE B

The World's First and Largest

Scores another FIRST!

AMERICAN LAFRANCE PRODUCTION MODELS



Turbine powered San Francisco Pumper,
1000 g.p.m. Class A Twin-Flow

Greater Power, Reduced Maintenance

Fire Chief William Murray and officials of the City of San Francisco, Calif. have the honor of ordering the world's first turbine engine powered production model pumper. This new American LaFrance pumper will be powered by a Boeing 325 B.H.P. turbine engine.

The turbine engine will not only provide outstanding performance on the famed hills of San Francisco but will provide a large power reserve to provide 1000 g.p.m. Class A performance.

The prestige of American LaFrance for top quality and performance is emphasized by the addition of this new service tested turbine engine to the regular line of piston type engines. On the record of performance of the Boeing turbine engine in all classes of service, Fire Chiefs Fitzgerald and Murray recognize its many fire service advantages.

The leadership of American LaFrance in offering the turbine engine for fire service use again demonstrates progressive engineering to provide dependable fire protection.

Everything you need to fight fire!

AMERICAN LAFRANCE
A DIVISION OF STERLING PRECISION CORPORATION
ELMIRA, N.Y.

LaFrance Export Corporation
Elmira, N.Y.
LaFrance Fire Engine and Foamite, Ltd.
Toronto 18, Ontario, Canada

Makers of Fire Fighting Equipment

WHEN LIVES ARE AT STAKE...

MOTOROLA RADIO RELIABILITY IS VITAL!

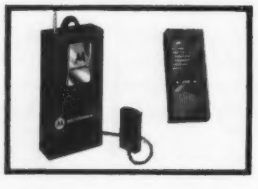
When the chips are down, your department can afford only the best communications. Property and lives may well depend upon your speed and efficiency . . . making sure that every man does his job . . . right now! The answer: Motorola radio communications.

Whatever your needs—mobile radio, portable radiophone, pocket radio—there is a Motorola radio that exactly fits your needs in the station, on the move, or at the fire.

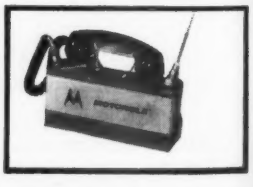
You're in good hands with Motorola. Want proof? More than 3 out of every 4 fire departments choose Motorola. Why? They have found it does the job better, works longer, and therefore, costs less.

Get the full details from your Motorola representative.

A MOTOROLA RADIO FOR EVERY NEED



"MOTRAC" radio—for communications between vehicles and headquarters. Transistorized receiver and power supply for maximum reliability, economy: standby operation on a trickle of current . . . operates with any 6 or 12 volt system.



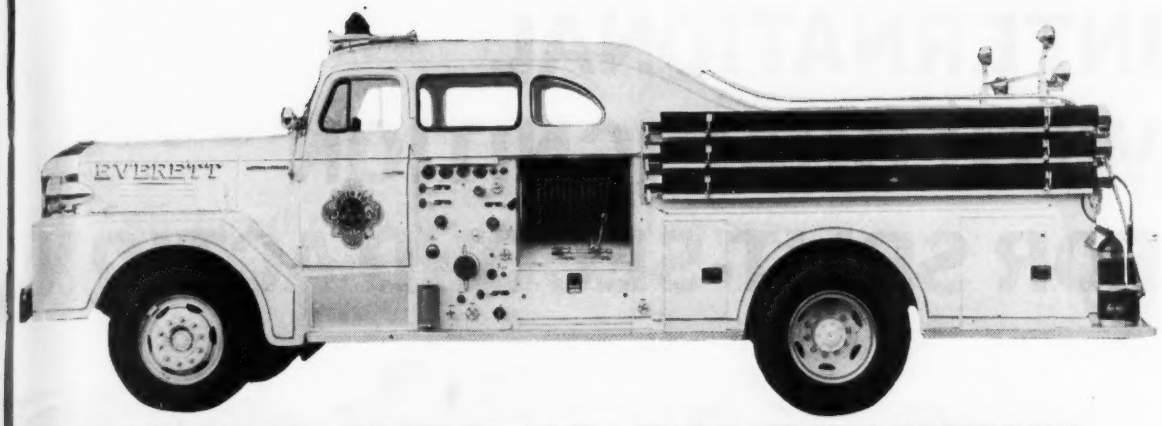
"HANDIE-TALKIE" portable radiophone—for firemen on foot. Extensively transistorized, rugged, high power, low weight.

VHF POCKET receiver and transmitter—fits pocket or belt. Frees hands. Fully transistorized, 12 ounce receiver.

MOTOROLA 2-WAY FIRE RADIO

Motorola Communications & Electronics, Inc., 4501 Augusta Blvd., Chicago 51, Ill. A Subsidiary of Motorola Inc.

"MOTRAC" and "HANDIE-TALKIE" are trademarks of Motorola Inc.



CUSTOM BUILT TO THE INDUSTRY'S HIGHEST POSSIBLE STANDARDS

Whether your need is for a deluxe pumper, squad wagon, city service truck or special emergency vehicle—you can be certain that you'll get the biggest value for your fire company dollar when you leave responsibility to Brumbaugh.

AS BEAUTIFUL AS IT IS PRACTICAL

—and with all the up-to-the-minute features you'll be proud to own. Let us work out a design to fit your company's particular needs and show you how relatively simple it is to own a Bruco. Compare and weigh all the facts and you'll find Bruco is your best buy! Send for descriptive folders or better still let us arrange a demonstration for you.

PUMPERS • SQUAD CARS • CITY SERVICE & EMERGENCY TRUCKS

Call Collect WIndsor 4-6103

BRUCO

BRUMBAUGH BODY COMPANY ALTOONA PENNA

Limited number of DEALER FRANCHISES Available

100 West Plank Road, Altoona, Pa.

INTERNATIONAL WITH DUAL IGNITION FOR SPLIT-SECOND ACTION!

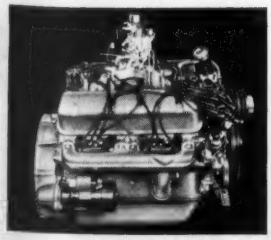
INTERNATIONAL Model VCO-196 shown here offers safe forward control vision. Choice of 401, 461 a 549 cu. in. V-8 engines and five axles. Select-O-Matic (semi-automatic) transmission reduces shift effort, allows maximum attention to driving. Other INTERNATIONAL Fire Truck Chassis to 33,000 lbs. GV

Only INTERNATIONAL brings you factory production V-8 engines with the doubly sure action of dual ignition. You can fire both sets of plugs simultaneously, or either set individually, by turning a switch. And these rugged, true-truck V-8's deliver dependable pumping power up to 257 hp., capacities up to 1,250 gpm.

INTERNATIONAL tilt-cab design provides easy engine access—and gives the driver close-up vision for total, safe command of the road. He can "see farther" into a turn or across an intersection.

See your INTERNATIONAL Truck Dealer or Branch soon for details. Here is where you get complete information on components and know-how to help custom-fit a fire truck chassis to your exact needs.

You can be sure of dependability, stamina, and safety right from the word go!



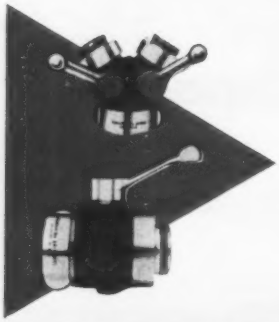
Dual Ignition International V-8's Leap Into Action.
Engines of 461 and 549 cu. in. displacement are true low stress V-8's and proved to operate at maximum rpm. By-pass cooling and alternating valve system help insure long engine life.
Contoured heavy dome piston and combustion chamber creates high turbulence and even burning of fuel.

INTERNATIONAL® TRUCKS WORLD'S MOST COMPLETE LINE IH®

International Harvester Company, Chicago • Motor Trucks • Crawler Tractors • Construction Equipment • McCormick® Farm Equipment and Farmall® Tractors

The world's lightest, tightest, toughest- it's "SUPER-FORGE" by Powhatan

Here's a coupling that will never let go and last through tough use for years. Can't corrode. Comes with three "Sensible Lugs" on both male and female with Higbee Indicators and is available in 1½" or 2½". To get the best, specify Super-Forge.

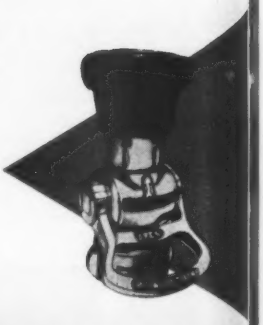


"BALL TYPE" VALVE and SIAMESE

A fast quarter turn and you're in business with a straight-through stream under any pressure. Rugged for hard service. Polished brass with red painted body. Pin or Sensible Lugs. Size 2½" x 1½" x 1½".

"DURA-FOG" NOZZLE

If you haven't tried this one—do so now. You'll find it the smoothest nozzle of them all. Uses less water—gives finer fog pattern. In 1" — 1½" — 2½" sizes.



POWHATAN
BRASS & IRON WORKS

RANSON, WEST VIRGINIA

In The Same Location Since 1892

NOW! FIELD TESTED and SCIENTIFICALLY PROVEN THE BATRONIC VENTILAIDE

FIELD TESTED:

Authentic reports of successful uses of VENTILAIDE—in some instances, after other methods had first been tried unsuccessfully!

SCIENTIFICALLY PROVEN:

We invite you to come to BOOTH No. 11 at the International Fire Chiefs' Convention and view our X-RAY MOTION PICTURE that clearly shows the effects of the BATRONIC VENTILAIDE on the breathing mechanisms of the human body!

Mfg. by

BATROW LABORATORIES, INC.

BRANFORD, CONN.

BATROW LABORATORIES, INC.
BRANFORD, CONNECTICUT

☐ Please send information
☐ Please arrange for demonstration

NAME_____

TITLE_____

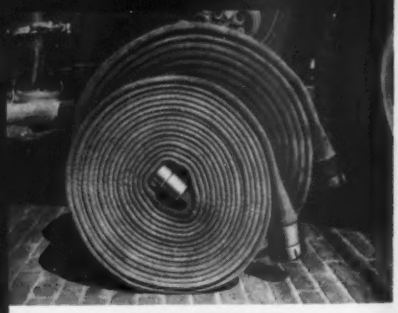
STREET_____

CITY_____

Which hose is always ready for the next fire?

Unless the white untreated hose is dried within a short time it will be subjected to attack by mildew and rot. This cannot happen to the other hoses. They are protected by Acme-Hamilton's Sealcott "W" mildew resistant treatment. Because the mildew fungi cannot penetrate the cords in the jackets, Acme-Hamilton hose is always ready for service.

Energy 600-lb. test hose treated with Sealcott "W" is dependable and easy to maintain. Sealcott "W" penetrates each fiber of both jackets, seals them from mildew and moisture. Energy packs compactly, too. Jackets have Dacron* filler cords which reduce bulk by 1/3, weight by 20%. * Reg. Trademark Du Pont Co.
Write Dept. 91.



COILS IN LESS SPACE

Acme Hamilton

MANUFACTURING CORPORATION, TRENTON 3, N. J.

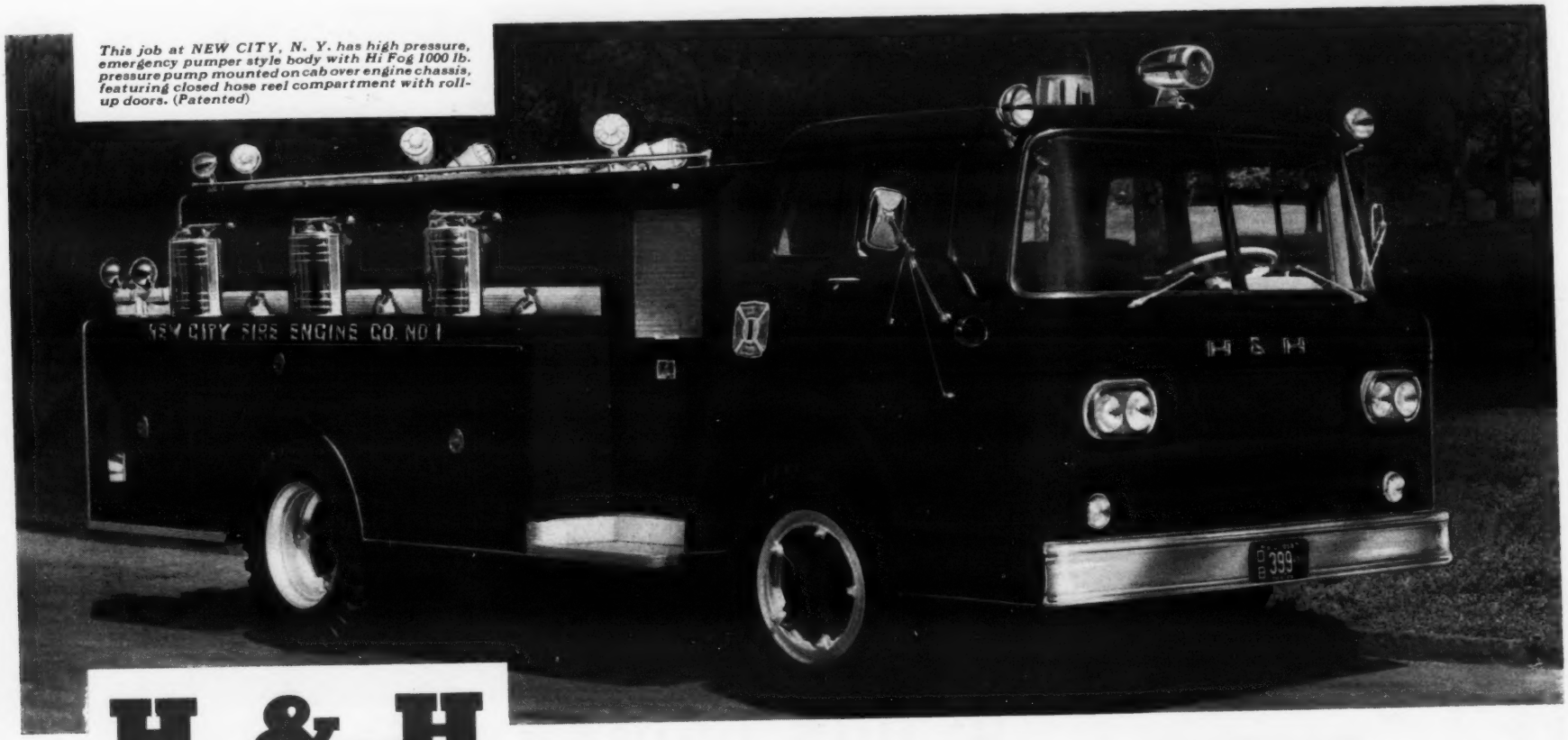
Divisions: Acme Rubber Mfg. Co. • Hamilton Rubber Mfg. Corp.

ATLANTA · CHICAGO · DETROIT · HOUSTON · INDIANAPOLIS · LOS ANGELES · MILWAUKEE · NEW YORK · PITTSBURGH · SALT LAKE CITY · SAN FRANCISCO · SEATTLE

If you feel you will fit into our expansion program, write us. A number of territories are open to qualified men.

H & H TRUCK TANK CO., INC.

725 Tonnele Avenue, Jersey City, New Jersey



This job at NEW CITY, N. Y. has high pressure, emergency pumper style body with Hi Fog 1000 lb. pressure pump mounted on cab over engine chassis, featuring closed hose reel compartment with roll-up doors. (Patented)

H & H

SPECIALISTS IN THE DESIGN AND BUILDING OF CUSTOMIZED APPARATUS

Fire and Rescue Trucks
Built to Meet
Your Specific Needs

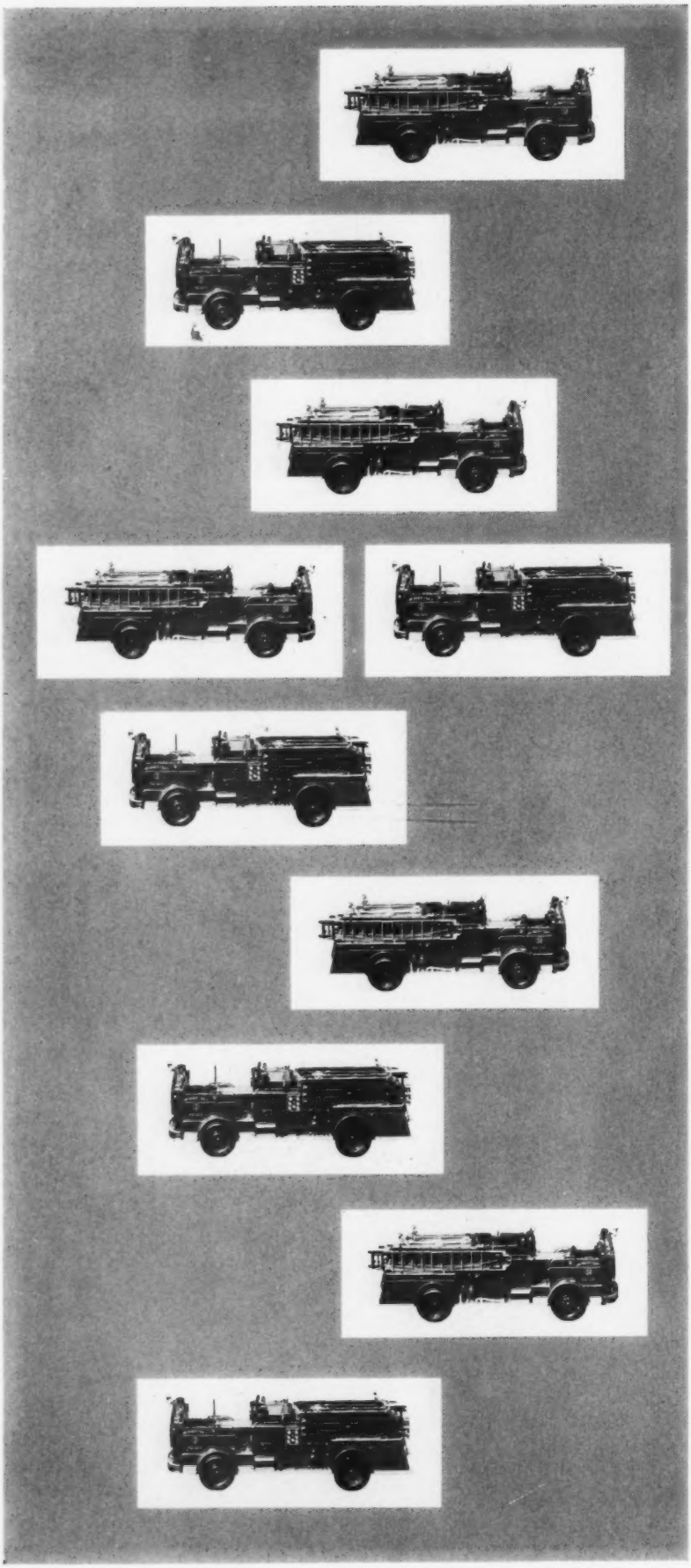
Here at H & H we help to make your apparatus dreams come true. All the things you have ever hoped for in apparatus can be yours when you give us the opportunity to work out your own ideas of what constitutes an effective piece of apparatus to fit your community's needs.
We build a complete line of pumpers, 500-750-1000 GPM. We have developed a specialized talent for special body design; crash trucks, emergency trucks, tank trucks to mention a few. Let's show you photos of some of our special jobs. They may give you a clue to our special body building skills. Write—

DISTRIBUTORS

If you feel you will fit into our expansion program, write us. A number of territories are open to qualified men.

H & H TRUCK TANK CO., INC.

725 Tonnele Avenue, Jersey City, New Jersey



KEEPING AHEAD WITH HIGH FOG

The Los Angeles County Fire Department has consistently lead the way in modern fire fighting methods under the direction of Chief Engineer, Keith E. Klinger.

Here are some of the reasons that will help Los Angeles County be ahead when the need is there. Ten 1000 gpm pumpers all equipped with High Fog Pumps are ready for action quickly without the need for laying hose lines to hydrants.

High Fog Pump is proud to be part of the equipment specified by Los Angeles County. Small Size, light weight and pressures up to 1000 psi are only a few of the qualities that make High Fog Pumps desirable for either new or existing equipment.

For information on how High Fog Pump can help modernize your fire fighting apparatus, write the manufacturer.

IHF

high fog pump co.

35 SANTA CLARA ST., ARCADIA, CALIF.

"INDIAN FIRE PUMPS

ARE OUR MOST IMPORTANT EQUIPMENT"

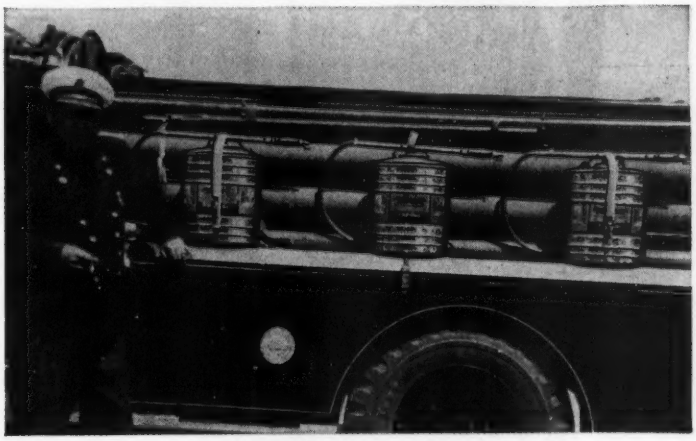
says Chief Ted Callender

"Here is a good picture of your **INDIAN FIRE PUMPS** mounted on one of our trucks. They are the most important pieces of our equipment.

Number one truck has 3 **INDIAN FIRE PUMPS**, number two truck has 3 **INDIAN** pumps and the emergency car has 2. Last year we had 58 grass fires."

Chief Ted Callender
Bangor Township Fire Department
Wheeler Road, Michigan

YOU, TOO, WILL BE JUST AS ENTHUSIASTIC ABOUT INDIAN FIRE PUMPS



No. 90 INDIAN Fire Pump

(sliding pump type)

No. 90 INDIAN with solid brass tank is very popular. Resists corrosion. EXTREMELY DURABLE.

No. 80 INDIAN Fire Pump

(lever type pump and handle)

BOTH MODELS APPROVED BY FACTORY MUTUAL

INDIAN FIRE PUMPS are advertised to millions of readers . . .

nd for folder describing NEW FIBER-LAS No. 90 INDIAN FIRE PUMP. Light eight. Will not rust or corrode.

Send for NEW Catalog

D. B. SMITH & CO. "FOR OVER 70 YEARS THE LEADERS" **406 Main St., Utica 2, N.Y.**

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"A COMPANY IS KNOWN—

On this . . . **our 20th ANNIVERSARY** as a major supplier to the Fire Service . . . we enjoy a strong surge of pride in the realization that so many CIRCUL-AIR users are "repeaters"—customers who have equipped additional stations after trial installations proved the worth of our modern hose cleaning, drying and storage facilities.

We get an even greater thrill in knowing that CIRCUL-AIR DRYERS have actually changed the trend in fire station architecture by eliminating costly, unsightly hose towers and drying racks. If YOU have a building project in the making and are interested in providing for your community the very best in fire department housing at realistic construction costs . . . write for your FREE COPY of Volume 5 of our publication, "FIRE STATION DESIGN" . . . the reference bible of thousands of chiefs, commissioners, city officials, architects and others assuming the responsibility of new building programs.

U. S. PATENT 2464706

FIRE HOSE DRYER

The **patented, electrically operated** CIRCUL-AIR hose dryer circulates **pre-warmed** fresh air through coiled, wet hose at the rate of **5 to 6** air changes per minute. It lengthens hose life, insures rapid, easy, safe drying for fire departments hitherto without drying equipment. It improves the appearance and functional design of new fire houses, saves floor space and hard work. Cuts construction costs by eliminating unsightly hose towers.

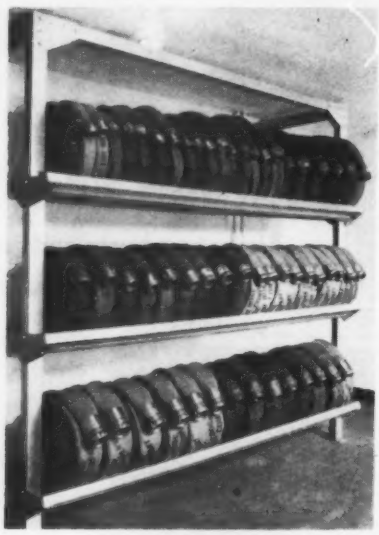
- **Dries in a few hours**
- **No radiant heat—Can't injure hose**
- **Dries fire clothing, too**
- **Ideal for hose storage**
- **Keeps *all* hose ready for service**
- **Aluminized, Rust-Proof finish**

APPROVED

Tested by Underwriters' Laboratories, Inc. and Canadian Standards Association. The only dryer listed by both.

RECOMMENDED

By leading hose manufacturers — by many state fire marshals, rating bureaus and hundreds of chiefs.



ECONO-RAK

Low cost, 2- and 3-tier sections 8', 5" long. Rugged steel construction. No pipes. No wood stringers to sag or warp. 3-tier rack holds 3000 ft.; 2-tier rack holds 2000 ft. Quality, weight of materials and workmanship are the best. Supplied for any ceiling height.

"Porto-Rak"
Hose Storage and Loading Unit

Every company needs this moderately priced, multi-use rack, 6', 5" high and 8', 7" long when loading table is detached. It stores about 2000 ft. of hose. Furnished with or without turntable. Rolls right to your truck for complete hose reload. Locking, fiber-wheeled caster.

THE CIRCUL-AIR CORPORATION,

565-575 E. Milwaukee Ave.
Detroit 2, Michigan

-BY THE CUSTOMERS IT KEEPS"

Here are a few of the more than 6500 outstanding fire departments in the CIRCUL-AIR "HALL OF FAME." Most of them are "repeaters," many with the "Full Treatment" of Hose Washers, Dryers and Storage Racks: Akron, Atlanta, Augusta, Baltimore, Baton Rouge, Boston, Birmingham, Bakersfield, Chicago, Cincinnati, Cleveland, Columbus, Dallas, Detroit, Erie, East Orange, Flint, Fort Lauderdale, Fort Wayne, Galveston, Green Bay, Grand Rapids, Halifax, Hartford, Honolulu, Houston, Ithaca, Jamestown, Kansas City, Kokomo, Little Rock, London, Louisville, Los Angeles, Manila, Memphis, Miami, Milwaukee, Montreal, Natchez, New Haven, New Orleans, New York, Oakland, Oklahoma City, Omaha, Peoria, Perth Amboy, Philadelphia, Portland, Providence, Quincy, Quebec, Rome, Rockford, San Diego, Seattle, Silver Spring, Springfield, Syracuse, St. Paul, Toledo, Toronto, Topeka, Trenton, Utica, Vancouver, Washington, Winnepeg, Wheeling, Winston-Salem, Xenia, York, Youngstown, Zanesville. **WE CAN DO THE SAME GOOD JOB FOR YOU! ! !**

The "Automatic"
FIRE HOSE WASHER

- HOSE IS SELF-PROPELLED
- UNIFORM WASHING
- WASHES EDGES, TOO
- DRAINS HOSE LININGS
- ONE-MAN OPERATION
- CLEANS WITH OR WITHOUT DETERGENTS

WASHES
RINSES
DRAINS

Roto-Jet

U. S. PATENT 2909794
Canadian Patents Applied for

Tables Sold Separately

Over 6000 Fire Departments Now Circul-Air Their Hose

BUDGET-PRICED ECONOMY MODELS, TOO

MODEL A-Z
the Compact Fire Hose Washer

Turntables Sold Separately

Low cost. Drains while washing. Uses clean water only at tap pressure. Hose is scrubbed by 4 long-wearing brushes and rinsed by 4 jet nozzles. "A-Z" to use.

IMPEL-AIR
HOSE DRYER

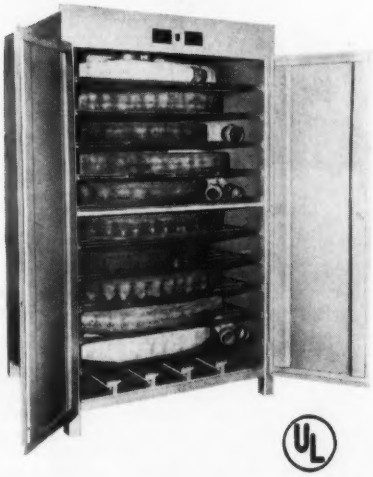
FORCED WARM AIR

•

QUALITY PERFORMANCE

•

BUDGET PRICED

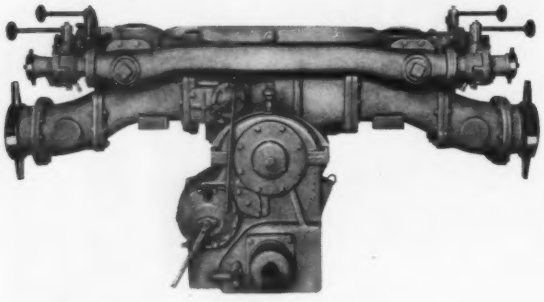


Here's the **most for the least!** No other dryer is so economical to buy and use. Ruggedly built and mighty attractive, it is the biggest value you can get in drying equipment. All steel, welded, made to Circul-Air's high quality standards.

Factories: Albion, Michigan, and Brampton, Ontario • Sales Agencies: Throughout the Free World.

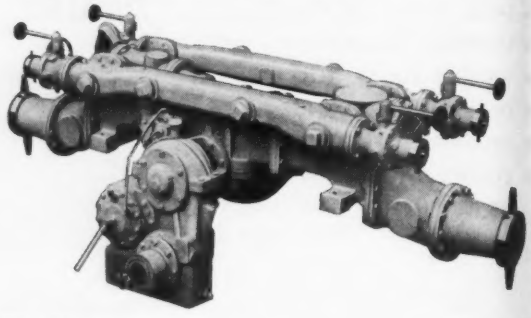
the HALE "Basic 4"

Hale builds FOUR basic Fire Engine pumps; two single-stage and two two-stage pumps—*not just one modified to meet all conditions.* Hale's four classes of midship pumps for fire trucks allow fire companies to meet specific needs for their particular areas. Check each pump . . . see how one of these four great Hale pumps suits your own particular needs best. All perform "above and beyond the call of duty."
All ratings are in U.S. Gallons per minute.



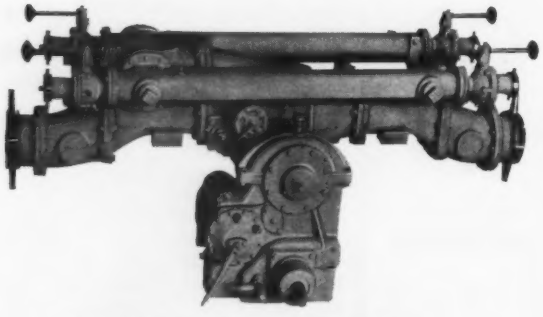
The HALE Type Q Pump

A two-stage, two-impeller pump. This is the pump you need for big jobs . . . maximum working pressure to 600 p.s.i. You can use it for 1000—1250—1500 G.P.M. (Class A) and have lots of reserve. Write for Bulletin # 367.



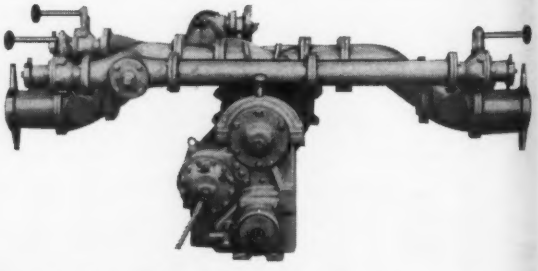
The New HALE Type QLD Pump

The new Hale 2-stage QLD—rugged younger brother to the "Q" —is outstanding in performance. Includes latest design features such as the 2" drive shafts in the pump drive unit, so important for heavy-duty service. Designed to meet and amply exceed 500—750—1000—1250 G.P.M. (Class A) ratings. Write for New Bulletin # 383.



The HALE Hi-Stage Type QSM

The Hale Hi-Stage QSM, with single double-suction impeller, is an "in-fighter" with terrific slugging ability. Notable for SIMPLICITY of OPERATION—operator has instant command of complete pumping range with one control, the engine throttle. Gives you 1000—1250—1500 G.P.M. (Class A) with tremendous reserve. Write for Bulletin # 365.



The HALE Super-Single Type QS

The single-stage Hale type QS is designed for high efficiency over a wide operating range compared to previous single stage pumps in its class. Meets the need for high performance plus SIMPLICITY of OPERATION. Pumps 500—600—750 G.P.M. (Class A) with ample reserve. Ideal for Fire Departments with limited budgets. Write for Bulletin # 362.

WRITE TODAY for Bulletins you want; ask too, for new list of quality Apparatus Builders using HALE Fire Pumps.

HALE FIRE PUMP COMPANY
CONSHOHOCKEN, PENNSYLVANIA

WHEN THE GOING GETS HOT

you want the PROTECTION only a GLOBE SUIT can give!

GLOBE DUCK SUIT . . . .

- Fire retardant, pre-shrunk, water repellent; yarns plied, doubled, and twisted for extra strength and cushion
- 100% waterproof, fire-retardant interlining; pliable at temperature extremes; resists deteriorating chemicals and air rot
- Sanforized, lightweight, plaid-flannel lining and/or 100% wool liner
- 5" Hackamore water-repellent corduroy collar; adjustable straps to insure tight fit against water, sparks, heat
- 100% wool knit wristers
- Aluminum, non-sparking safety-snap and D-ring fasteners
- 6" no-gap storm flap on coat front

GLOBE ALUMINIZED SUIT . . .

- Reflects away 90% of all radiant heat
- Cuts weight of protective clothing by almost 50%
- 3M Brand aluminized rayon fabric, New Type 48 #569 (10 oz. per yd.) with high stress-tear strength
- Available in Air Force heat-protective cover coat and pants

STANDARD SINCE 1901

GLOBE

MANUFACTURING COMPANY

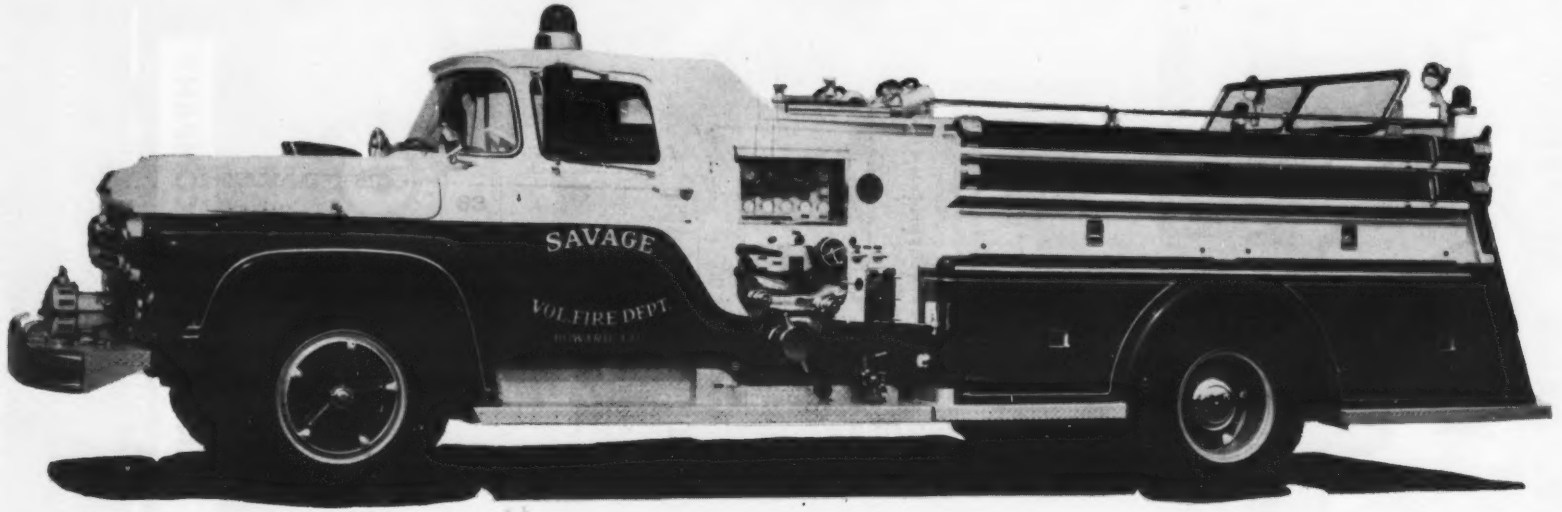
PITTSFIELD, NEW HAMPSHIRE

WRITE FOR FULLY ILLUSTRATED CATALOG

See us at the International Association of Fire Chiefs Convention, Rochester N.Y. Booth 134

CREDIT BELONGS WHERE CREDIT IS DUE

We salute our employees for their skill and excellence in building fire apparatus of matchless quality. Their determination to maintain uncompromising standards of perfection has made our fire apparatus the unquestioned leader in giving customers the best value for dollars spent.



This trophy winner is an example of fire apparatus built by craftsmen who enjoy their work.

We would be pleased to have you visit us at the IAFC meeting in Rochester. See our "Goliath"

Young **Fire Equipment Corporation**
1548 William St., Buffalo, N. Y.

OUR REPRESENTATIVES

Allen A. Case, 99 Tyler St., Buffalo 14, N. Y.
Bennett Feller, Box 353, Red Hook, N. Y.
Fire Fighter Equipment Co., Box 640—Route 10, R. D., Dover, New Jersey, Attn: Fred L. Harding
Ray Hanbury, 7429 Allentown Rd., Washington 22, D. C.
Chester Nichols, 112 Summerville Drive, Rochester 17, N. Y.
Perry Smith, Tech Supply Co., 52 South Hawk St., Albany, N. Y.
Mark Townsend, 15 Winfield Ave., Lancaster, N. Y.
Lloyd Tyler, Hannibal, New York
James Whitney, R. D. 2, Mayville, N. Y.
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William Boys, Palmyra, New York
C. E. Wood, 316 Engle St., Chester, Penna.

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C. E. Wood
316 Engle St.
Chester, Penna.

ERING

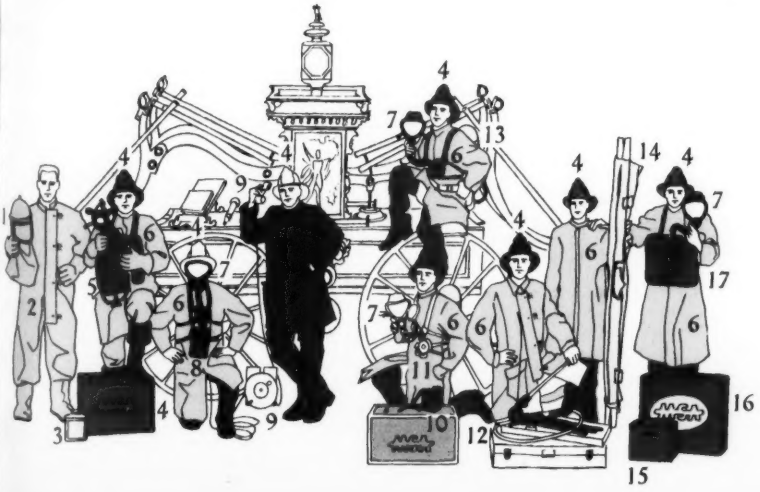
Breathes there a firefighter who hasn't longed to run with the engines of old . . . swapping tales of daring deeds . . . fighting the big blazes of yesteryear . . . shouting commands from a foreman's trumpet . . . waging fierce rivalries with other brave fire laddies . . . sweating heroically in red flannel shirts . . . now parading alongside the hand-painted engine panel . . . now polishing the plate on the ornate signal lamp . . . a signal lamp like the one below, perhaps. This one topped the old Philadelphia-style Vigilant Hand Pumper in 1853. The Vigilant Volunteer Fire Co. of Pittsburgh was the proud owner. On the next two pages, the old double-decker Vigilant presents a warm contrast to the modern-day equipment displayed by Mine Safety Appliances Company, also of Pittsburgh.

Please turn to next page

"TRUE NOBLEMEN OF OUR REPUBLIC" . . . thus did a grateful America dub its firefighters a century ago. To symbolize this vigorous heritage of *today's* firefighters, we've mingled the romantic past with the streamlined present. The resulting contrast is apparent in the photo above. The jaunty rig now resides in a museum. And the stiff formal poses are relics of the gaslight era. But the smooth trim lines of the safety and rescue equipment from Mine Safety Appliances Company are strictly '60. And what a difference a complete line makes today. Measured in time or money or precious human lives, the savings are very real indeed. For a demonstration or specific product bulletins contact your local MSA Fire Department distributor. Or write: MINE SAFETY APPLIANCES COMPANY

MSA
SAFETY EQUIPMENT HEADQUARTERS

Vigilant Hand Pumper courtesy of Carnegie Museum, Pittsburgh



Legend for MSA Products

1. Fire Hood. 2. Fire Approach Suit. 3. Chemox Canister. 4. Streamlined Firemen's Helmets. 5. Chemox Oxygen Breathing Apparatus. 6. Bunker Suits. 7. Clearvue Facepieces. 8. All-Service Gas Mask. 9. Maskfone. 10. Explosimeter. 11. Air-Cub Mask. 12. Porto-Power Rescue Equipment. 13. Demand Air Mask. 14. Stretcher. 15. Foille Burn Kit. 16. Pneolator Resuscitator. 17. Half-Hour Chemox.

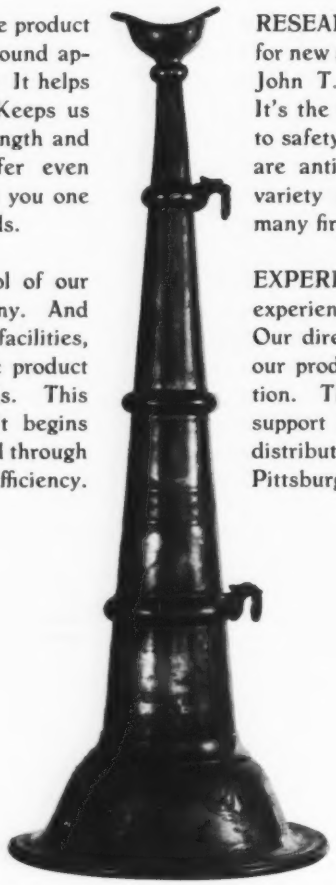
MSA®
SAFETY EQUIPMENT HEADQUARTERS

MSA backs up its label with SELECTION • QUALITY • RESEARCH • EXPERIENCE

Here's what this backing means to firefighters . . .

SELECTION: We believe our complete product line selection of over 3600 items is a sound approach to solving your safety problems. It helps us form unbiased recommendations. Keeps us completely objective. The extensive length and breadth within our product lines offer even greater selectivity. This depth assures you one source of supply for all your safety needs.

QUALITY: We believe quality control of our product belongs within our own company. And so it does. MSA people, manning MSA facilities, work with utmost care to maintain the product quality human life protection demands. This quest for quality is company-wide. It begins with raw materials selection. It's carried through to the last rigid test for full operating efficiency.



Ornate speaking-trumpets like this one (circa 1800) were usually bestowed as a gift from fire laddies upon a well-respected officer of their company. On parade, tough old foremen were not above upending the horn and carrying a huge bouquet of flowers in it.

RESEARCH: We believe in the constant search for new and better safety products. Evidence our John T. Ryan Memorial Research Laboratory. It's the largest in the world devoted exclusively to safety. Here, MSA scientists and technicians are anticipating, solving and resolving a great variety of safety problems. Problems which many firefighters haven't yet encountered.

EXPERIENCE: We believe in solid bedrock experience for the man who offers safety counsel. Our direct field sales force is factory-trained in our products, industry-oriented in their application. The MSA man provides strong technical support for your local MSA fire department distributor. Mine Safety Appliances Company, Pittsburgh 8, Pennsylvania.

For complete product information contact your local MSA Fire Department distributor or the nearest MSA sales office.

Alco-Lite Ladder involved in dramatic rescue!

Boston fire fighters struggle with man after he was rescued from his 4th floor apartment during early morning fire, May 11. He was caught by the fire fighters when he tried to leap from window.

Exclusive Alco-Lite gusset-plate, expansion bushing construction makes possible the open siderail, T-channel design that eliminates extra weight-adding bulk without sacrificing an ounce of strength. This makes Alco-Lite Aluminum Ladders lighter in weight, and can save you precious minutes handling time at fires.

Alco-Lite Aluminum Ladders more than meet all requirements for strength and safety. They can't warp, rot, splinter, or burn. They are not affected by moisture, fumes, or gases. Maintenance is almost negligible.

Be sure you specify Alco-Lite Aluminum Ground Ladders on your apparatus. You'll find them easy to handle, safe, and no trouble to take care of.

Aluminum Ladder Company ALCO-LITE

FLORENCE S. CAROLINA

The greatest life-saving advancements come from DIVCO

The new DIVCO/M-M Emergency Rescue Vehicle

the rescue truck designed by rescue squads

Every inch a lifesaver, the Divco/M-M Emergency Rescue Vehicle fulfills your need for specialized equipment capable of holding 12 men or five stretchers with a huge cabinet space of more than 120 cubic feet for additional equipment storage.

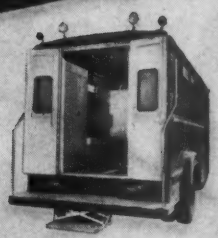
A forward-control van type vehicle offering excellent maneuverability in tight places and great visibility, the new Divco/M-M Emergency Rescue Vehicle rides on the famous Divco rugged, multi-stop chassis, proved in more than three billion miles of operation.

Road speeds in excess of 60 MPH are attained from the 6-cylinder overhead valve 114 HP engine. Total weight with standard equipment is 8,400 pounds with a gross vehicle weight up to 14,000 pounds.

The Divco/M-M Emergency Rescue Vehicle can be built to your specifications within the many available Divco Chassis and Body Shells—MM interiors and equipment options.

Contact your Divco or Miller-Meteor Distributor today for complete details.

DIVCO



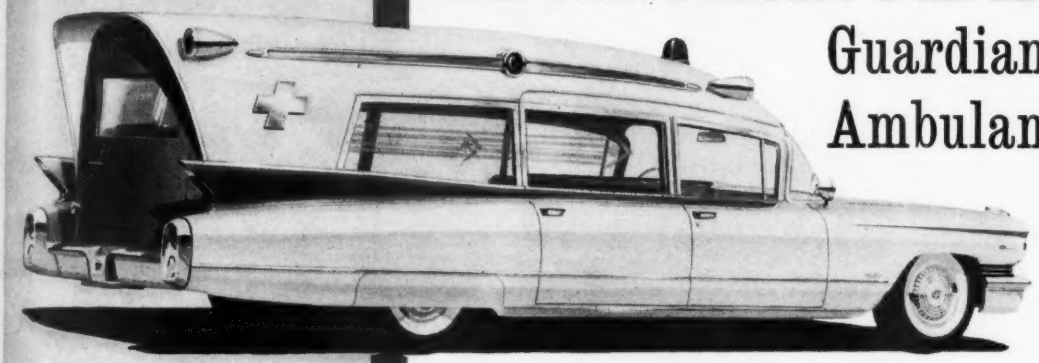
Rear platform extends a full 16 inches, features four-way non-slip tread steel plate. Chromed safety hand rails are provided both right and left as well as above rear door. Rear step (optional equipment) folds back under platform. Optional work lights on top of truck feature swivel base.

Interior view shows roomy 26-inch aisleway of four-way steel tread. Included are electric power exhaust ventilator, hanger rails, eight-inch house lights (110 v.), fold-away stretcher brackets shown in folded position, standing cabinets with shelves, underseat cabinets to hold stretchers and 15,000 BTU gasoline heater that runs independently of truck motor.

DW DIVCO TRUCK DIVISION · 22000 Hoover Road · Detroit 5, Michigan
DIVCO-WAYNE CORPORATION · AMERICA'S NO. 1 TRANSPORTATION SPECIALISTS

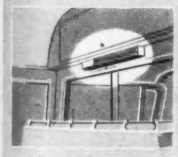
and MILLER-METEOR foremost names in specialized transportation

The New Feature-Full M-M Guardian Ambulance

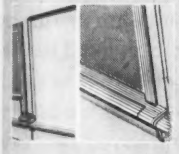


Handsome weather shield around rear door protects interior when rear door is open, or when rear window is lowered. Built-in flood light illuminates entire rear area for safe, easy loading.

Electrical plugs in rear bumper for emergency rescue tools, lights and quick battery recharging.



Germicidal ultraviolet lamps (optional) sanitize and decontaminate ambulance interior in seconds.



VaniShades afford privacy, disappear into window sills. Exclusive and standard on all M-M ambulances.

Special dispensary cabinets available. Stainless steel tops and Formica finishes make cleaning easy.

Superb riding comfort. New frontal roll for leg ease, new inner design and dramatic new styling.

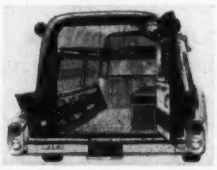
a spectacular new concept in life-saving efficiency

There's a whole new standard of emergency vehicle design within your reach today in the distinctive new Guardian—the world's greatest ambulance by Miller-Meteor.

Unprecedented loading ease, vastly increased interior working room and built-in conveniences are artfully combined with a rich and distinctive appearance to put the Guardian ambulance way out front of everything that's gone before in this highly specialized field.

With the M-M Guardian you are ready to provide the most in performance, and to arrive with the authoritative look of advanced efficiency and speed that counts so much on the scene of action.

Your Miller-Meteor Distributor has the complete story for you. He can also supply you with full information on the Divco/M-M Emergency Vehicle. Ask about both!

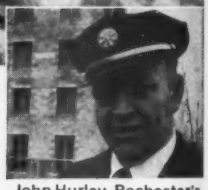


Huge 46¼" high by 45¼" wide vertically-mounted rear door opens easily, yet never extends beyond side of car. Recessed, lighted bumper (optional) and low floor level increase loading ease. Exclusive design greatly increases headroom and width clear to back, taking fullest advantage of wide Cadillac ambulance chassis and high 52" headroom. There are convenient storage compartments at rear under floor, and immense storage facilities up front over partition and still more storage areas at side.

MILLER-METEOR DIVISION · *Bellefontaine, Ohio*

DIVCO-WAYNE CORPORATION · AMERICA'S NO. 1 TRANSPORATION SPECIALISTS

New all-"Dacron" Porter Bonded Fire Hose takes this kind of hose-killing abuse in stride. On test for two years by the Rochester, New York Fire Department, Porter Hose still does not show signs of wear.



John Hurley, Rochester's Deputy Chief, says, "Porter hose cuts our hose inventory in half... saves up to an hour 'out-of-service' time."

New All-"Dacron" *Porter*® hose loves work like this ...shows no wear after two years of use!

This new all-"Dacron" Porter Bonded Double-jacket Hose is making friends with fire fighters and fire departments all over the country. No other fire hose can match Porter hose on all these counts:

Eliminates drying—Its bonded double-jacket of "Dacron" defies moisture . . . can be repacked wet without fear of mildew or rot . . . saves depot trips for dry hose . . . cuts hose inventory in half.

Resists tough—wear All-"Dacron" Porter hose lasts many times longer than ordinary double jacket hose under the most severe usage. It even takes the rugged abuse of abrasive ice and corrosive chemicals.

Lighter, more compact—New all-"Dacron" Porter Hose takes 30% less space, so many more sections can be packed into a truck.

It's no wonder so many departments are switching to this new all-"Dacron" Porter Bonded Double-jacket Hose . . . no wonder, when only half as much hose does the job better and stays on the job longer. Get all the facts on this new and improved fire hose.

See your Thermoid Division distributor or write *Thermoid Division, H. K. Porter Company, Inc., 200 Whitehead Road, Trenton 6, New Jersey.*

THERMOID DIVISION PORTER **H. K. PORTER COMPANY, INC.**

PORTER SERVES INDUSTRY with steel, rubber and friction products, asbestos textiles, high voltage electrical equipment, electrical wire and cable, wiring systems, motors, fans, blowers, specialty alloys, paints, refractories, tools, forgings and pipe fittings, roll formings and stampings, wire rope and strand.

CHIEF
This is for YOU

The *Scott* SLING-PAK is designed for your personal Respiratory Protection!

Scott Pak-Alarm. An Audio-Video Safety System for all Scott Air-Paks.

Yours is a position of leadership, responsibility and quick decisions. In minutes you must decide on a plan of fire attack.

In the performance of this important function, you will find your personal Sling-Pak helps you to safely make your way through heavy smoke to speed up your inspection, for a faster decision on your plan of action.

The Scott Sling-Pak is light and comfortable. It can be donned in seconds. It provides respiratory protection for a minimum of 15 minutes at extreme exertion. The Scottoramic Mask gives you unobstructed vision in all directions.

Chief, once you have acquired your personal Sling-Pak, you will experience a new feeling of confidence — the confidence that comes from knowing you have the world's fastest and safest respiratory protective equipment.

Scott AVIATION CORP.
215 ERIE STREET, LANCASTER, N. Y.

Export: Southern Oxygen Co., 250 West 57th Street, New York 19, New York
Canada: Safety Supply Co., Toronto — Branches in Principal Cities

SCOTT AVIATION CORP.
215 ERIE STREET, LANCASTER, N. Y.

Please send me the following literature and prices:

- ☐ Scott Air-Pak brochure; 6 pages, 2-color.
- ☐ Scott Pak-Alarm Specification sheet and prices.

Name_____ Title_____

Address_____

City_____ Zone____ State_____

Take a tour of Columbus, Ohio...

where Leece-Neville alternators have ended battery problems!

The fast, never-resting pace of patrol cars and emergency wagons in the Columbus Police Department necessitates replacement every 12 to 16 months. According to Sgt. Harry M. Buckner, who heads up police vehicle maintenance, "About 145 of our units are Leece-Neville alternator equipped. We transfer the alternators from old cars to new ones as they are purchased, and one alternator usually outlives three cars."

"Leece-Neville alternator systems have been the answer to our battery problems," reports Walter W. Curlis, Superintendent of Municipal Garages (right above). "Not only do they keep our batteries in operating condition at all times, but they give us exceptionally long, trouble-free service that helps keep generator and battery maintenance expense to a minimum."

Fire Maintenance Foreman William H. Miller (second from left above) claims, "We have about 100 pieces of equipment with Leece-Neville alternators—cars, trucks, squad wagons and pumpers—and they give us no trouble over the life of our vehicles. Some alternators installed in 1950 are still in service; others have gone better than 100,000 miles. These alternators keep batteries charged, eliminate the need for charger plugs on our cars, and improve radio performance on all of our units."

Columbus, capital city of Ohio, is also noted for its progressive city government, its vast land area compared to population, and its rapidly growing network of modern freeways.

Way back in 1946, when Leece-Neville first introduced the alternator-generator for automotive use, Columbus immediately installed six units for test purposes (3 are still in use). Today the city fleet includes almost 400 vehicles equipped with Leece-Neville alternators. Usage is widespread . . . in police, fire, traffic regulation, electric, water and sewer departments . . . wherever discharged batteries have been a problem in the past.

Alternators may solve your problem too! But be sure you specify *Leece-Neville alternators*, proved trouble-free during 14 years of actual service in all parts of the country. No other supplier can make this claim! For complete information, mail the coupon below. Leece-Neville also is a leading supplier of DC generators, fractional HP motors, regulators, cranking motors and switches.

QUALITY ELECTRICAL EQUIPMENT
Leece-Neville
SINCE 1909

Specify Leece-Neville alternator systems as factory-installed special equipment on new vehicles.

20 trucks and 4 cars in Columbus' Traffic Regulation Department are equipped with Leece-Neville alternator systems. Even with a full electrical load of multiple flasher lights and 2-way radios in operation during long periods at engine idle, L-N alternators keep batteries charged.

The Leece-Neville Company, Dept. FE-8
1374 East 51 Street • Cleveland 3, Ohio

Please send me complete information about alternator systems and other products for my type of service.

Name _____ *Title* _____

Firm or Dept. _____

Address _____

City _____ *Zone* ___ *State* _____

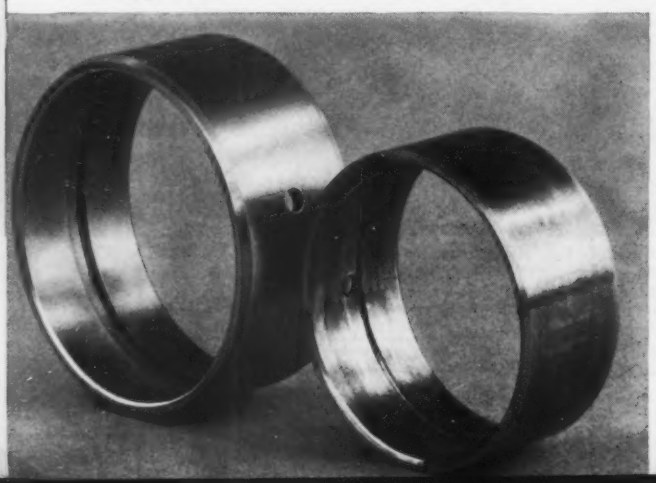
Type of Service _____

Before it is shipped every

run-in and tested

Part of Onan's testing facilities—largest electric generating plant testing area in the industry!

Big, brawny bearings on Onan engines—twice the bearing area of most competitive bearings. Means longer life between overhauls. Another of many ways that Onan is built *up* to performance, not built down to a price.



Stellite coated exhaust valves and valve seats. One of toughest alloys known. Gives you up to 300% longer valve life than uncoated valves. It's the important details like this that make Onan more economical in the long run.

Onan Electric Plant is d for hours

And we mean every Onan Electric Plant! This rugged workout under load means every Onan is ready for hard work the day you get it!

Every Onan plant has a nameplate with horsepower and output ratings. Every single plant is put through a series of tough tests to make sure it does what the nameplate says it will do *before it is crated for shipping.*

But this isn't enough. Inspectors from an independent laboratory pay our factory frequent surprise visits. Their job is to check and double-check—our tested plants as well as our testing equipment and methods. They pull a plant off the line, run it, stop it, gun it, stall it, check and recheck. The end result is Onan's exclusive *Performance Certification* . . . your guarantee of getting the power you paid for.

See the dependable Onan Generating Power Plants soon. You can find an Onan distributor in the Yellow Pages in every major city, or write direct.

ONLY ONAN GIVES YOU THIS CERTIFICATION

PERFORMANCE CERTIFIED
We certify that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its nameplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory.
D. W. ONAN & SONS INC.
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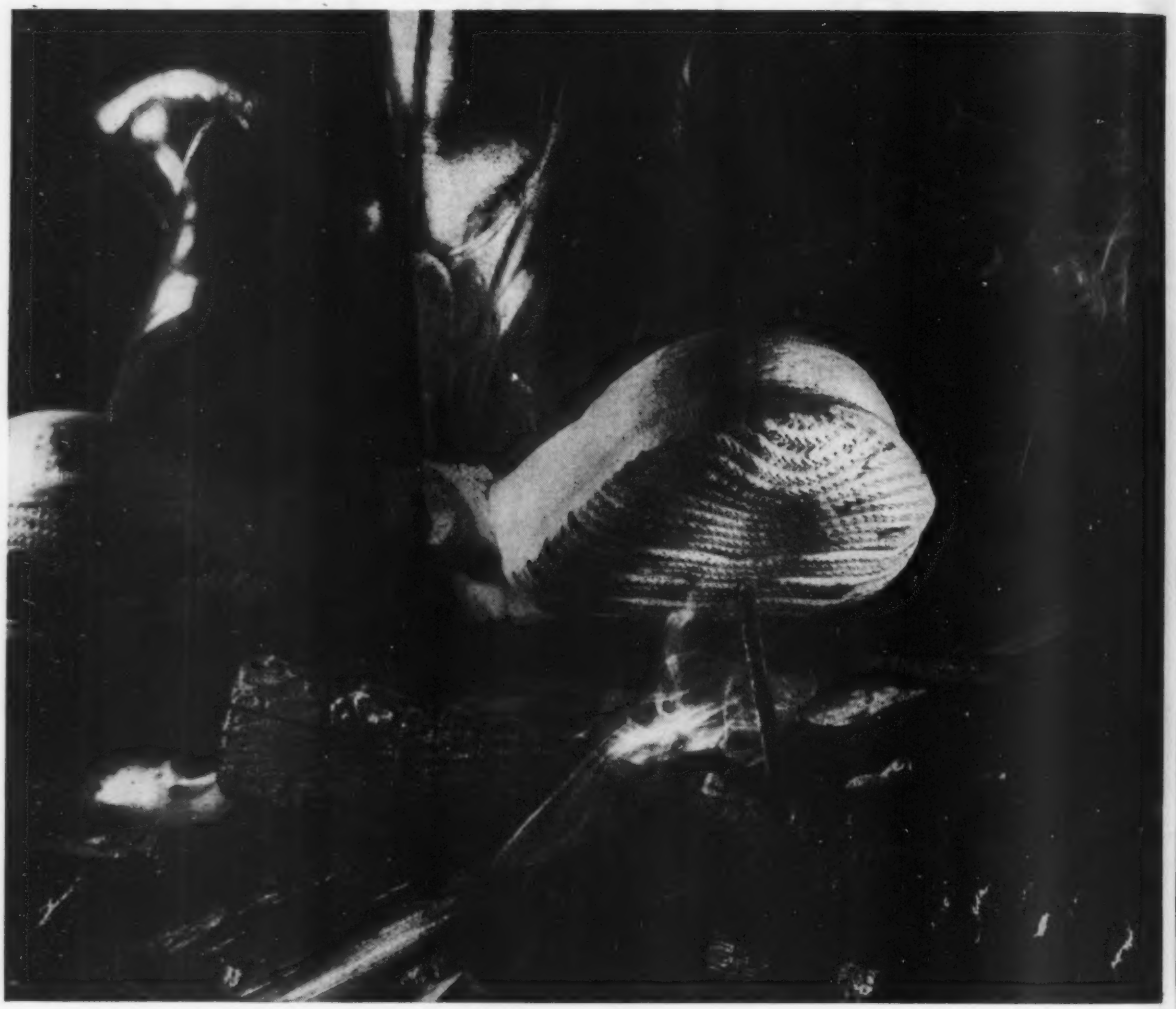
Onan®

World's Leading Builder of Electric Power Plants

D. W. ONAN & SONS INC., 2618 UNIVERSITY AVE. S.E., MINNEAPOLIS 14, MINN.

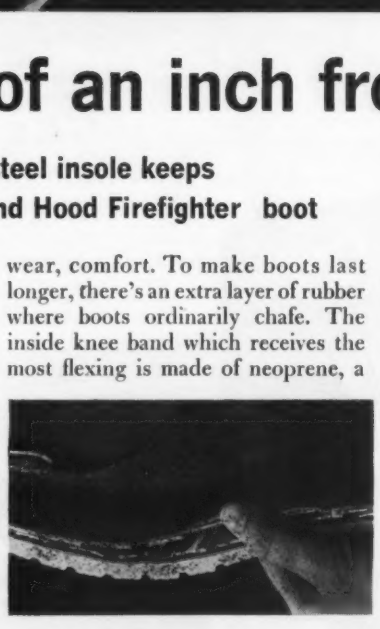


A quarter of an inch from danger

. . . but new flexible steel insole keeps feet safe in B.F.Goodrich and Hood Firefighter boot

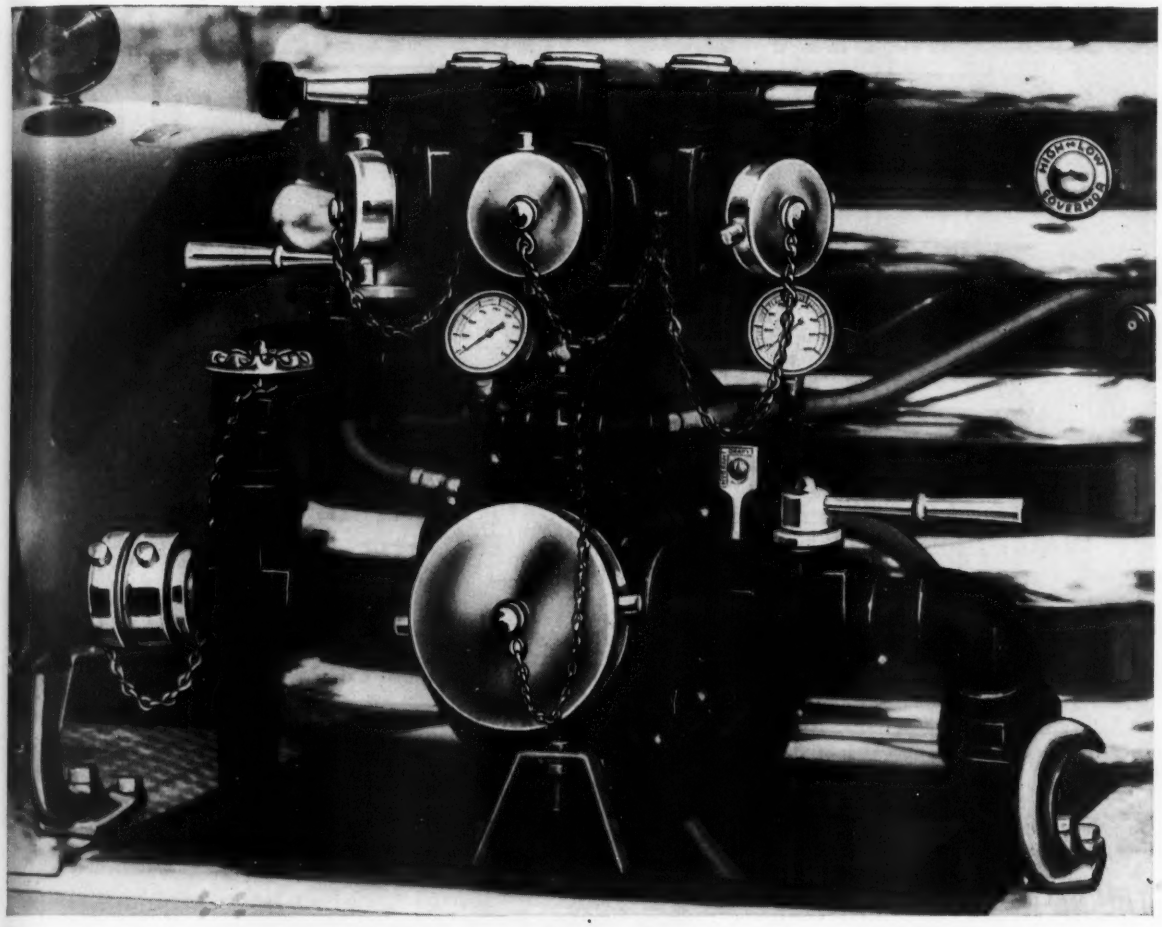
THAT sharp spike can't stab through the sole of *these* boots. Your feet are protected by overlapping steel plates buried in the flexible safety insole. New B.F.Goodrich and Hood *Firefighter* boots are also reinforced with an extra heavy toe cap, and have a non-slip sole that prevents nasty spills when it's slippery under foot. Both toe and sole are a brilliant white color for greater visibility.

Attention to small details in the construction of these *Firefighter* boots also makes a big difference in extra wear, comfort. To make boots last longer, there's an extra layer of rubber where boots ordinarily chafe. The inside knee band which receives the most flexing is made of neoprene, a special rubber that resists cracking. Straps and buckles are fully coated with rubber and securely anchored into body of the boot. Interior of boot is lined with soft felt to keep legs and feet warm. Outsole shank is especially designed to make feet more comfortable on ladders. And the leg is made extra wide so boot is easier to get on and off.



B.F.Goodrich and Hood *Firefighter* boots with the new flexible safety steel insole come in sizes 5-13, in short and Storm King height. For more information, call your BFG or Hood distributor; or contact *The B.F.Goodrich Company or Hood Company, Dept. F, Watertown 72, Mass.*

FIREMEN'S BOOTS BY B.F.Goodrich and Hood



NOW... A 750 GPM FRONT MOUNTED PUMP

BARTON-AMERICAN MODEL UA-75

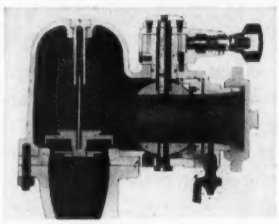
Look at the advantages this biggest Barton-American front mounted pump gives you—extra advantages that help you "kill" fires in a hurry:

The UA-75 is a Class A pump rated at 750 gpm at 150 lbs. Handles *three* 2½" hose lines for volume—and delivers high pressure to 400 lbs. for effective fog streams. You can fight brush fires *while truck is moving* . . . and "nose" down to pond or stream to draft water inaccessible to midship pumpers.

Exclusive, interlocking pump clutch has direct mechanical connection. It *can't* slip! Frost-proof design has been *proven* in thousands of pumps. *Engine vacuum primer* is positive, fast and frost-proof. *Direct controls* make operation fast and easy. Accessibility and simple pump construction cut maintenance time.

The UA-75 includes *factory engineered* p.t.o. shaft, universal joints and pump gear ratios best for *your* truck's engine.

It will pay you to investigate the top-quality, precision-built Barton-American Type UA-75. It *costs less* to buy, install and maintain—because it's simpler!



Has Ball-Type Locking Valves.

Regulates volume as you desire. A quarter-turn of the handle locks it positively in any position. Check valve eliminates need to close hose lines to prime pump. Smooth operation—heavy duty construction.

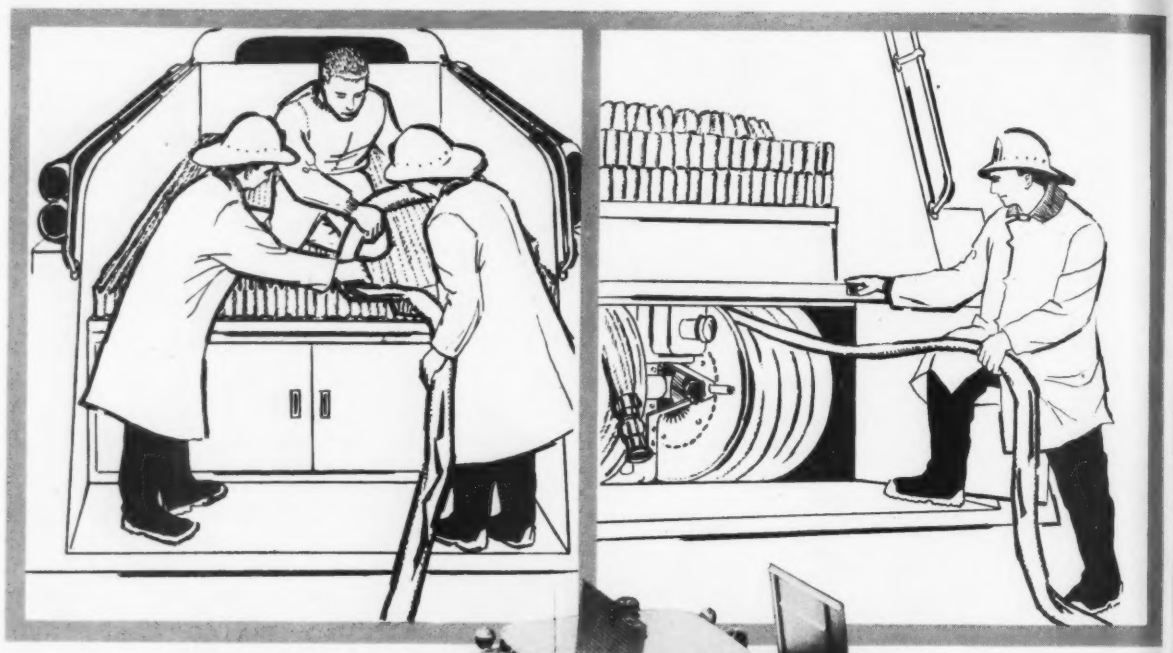
VISIT US AT BOOTH 135, I.A.F.C. Convention, Sept. 12–15

WRITE TODAY FOR BULLETIN 8331.

★ AMERICAN ★
FIRE PUMP COMPANY

P. O. BOX 219-A BATTLE CREEK, MICHIGAN

ONE MAN does the work of three with reels by HANNAY



YOU'RE IN ACTION FASTER AND BACK IN SERVICE FASTER WITH HANNAY REELS

Now you can handle pre-connected CRL hose with the same speed, efficiency and dependability you get from booster hose reels. One man can unwind 200 feet of 1½" hose faster and with no need to make a connection. One man can rewind the hose with push-button electric control in less time than is normally required for three men to lay hose in the truck bed.

Compact, matched electric rewind Hannay reels handle 400 feet of 1½" CRL hose on the pumper shown here. Completely enclosed rear cabinet mounting protects hose at all times. Matched electric booster hose reels each handle 200 feet of 1" hose.

To handle booster hose *or CRL hose,* specify the reels designed and built by active firefighters . . . specify hose reels by Hannay.

See the newest Hannay reels at Booth 80-81, 87th IAFC Conference Sept. 12-15, Rochester, N. Y.

Hose Reels by HANNAY

CLIFFORD B. HANNAY & SON, INC. **WESTERLO, NEW YORK**

MIDWESTERN

Safety Clothing for Firemen

The Original STRIPED SAFETY COAT

The striped safety coat for firemen is an Original Midwestern development—first in the field—a leader ever since its introduction 19 years ago.

The BRILLIANT YELLOW stripes are actually rubberized into the black rubber . . . and exclusive feature that defies comparison with substitute or imitation models where the stripes are glued, sewed or painted on the material.

When working under hazardous conditions in smoke, fog, dust or darkness, firemen deserve the superior quality, design, comfort and safety features offered by the Original Midwestern Safety Coat.

Many Fire Chiefs who insist on the best of protection for the men of their department specify MIDWESTERN SAFETY garments to the last man because every outstanding Midwestern feature is original. All fabrics are extremely soft and flexible and have the qualities to stay that way at varying temperatures. You can always distinguish a MIDWESTERN SAFETY garment by the soft feeling of the material in both rubber and fabric type garments.

We have always designed and constructed our garments with the one thought . . . that every fireman deserves complete protection in his hazardous work of protecting life and property against the ravages of fire.

COMBINATION SAFETY SUIT

The many weights of both rubber coated and cloth type materials offered in our MIDWESTERN Quick-Hitch suit makes this combination ideal for all sections of the domestic market and export. Also, both coat and bunker pants may be purchased with or without detachable wool linings.

See your MIDWESTERN dealer or WRITE
For Free Catalog and fabric samples

NONE GENUINE WITHOUT THIS TRADE

MIDWESTERN SAFETY MFG. CO., Mackinaw, Ill.
Located in the heart of the Greater Peoria Manufacturing Area
Manufacturers of the Famous MACKINAW Safety Coat

V-12 299hp.

MOST "GO" ON THE ROAD! PUMPS UP TO 1500 GPM, TOO!

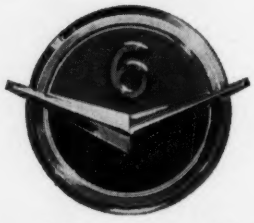
Modern fire fighters save precious time with the dependable, immediate response of this exclusive GMC Twin-Six . . . most powerful standard production gas engine built! Plenty of reserve power for steep grades. Saves work with up to 60% less gear shifting. Pumps up to 1500 gallons per minute, hour after hour, year after year. And there are many more advantages your GMC Dealer will be happy to discuss. Give him a call today. He's listed in the Yellow Pages. GMC Truck & Coach—a General Motors Division—Pontiac, Michigan.

Exclusive V-12 powered GMC tilt-cabs are easier to drive with up to 35 feet shorter turning. Safer, with the biggest vision you can get. More convenient servicing, too. Extra low steps make entry and exit easier.

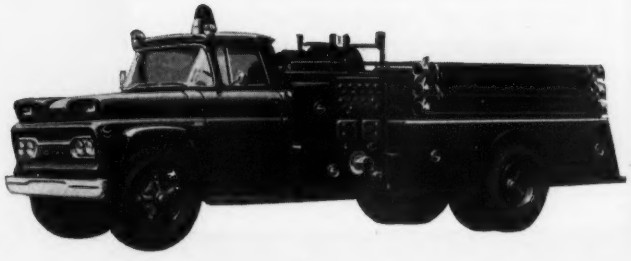
GMC
GENERAL MOTORS CORPORATION
TRUCKS

GMC V-6 and Twin-Six engines meet all the power requirements for 500 to 1500 gallons per minute . . . 90" and 105" Conventional and 72" Steel Tilt-Cabs.

ONLY GMC FIRE ENGINES HAVE HIGH-PERFORMANCE V-6 POWER!

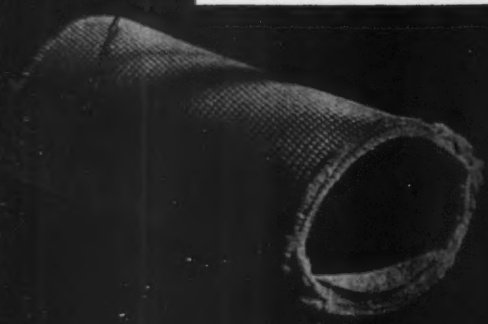


Get quick starting and fast acceleration with top power at lower rpm. Join the fire departments that choose V-6 as their favorite power plants.



This GMC Conventional has the exclusive V-6 engine. In addition—easier-handling, smoother-riding, independent front suspension and roomier, lower cabs are standard equipment, too.

WEIGH THE FACTS— AND YOU'LL CHOOSE BOSTON HOSE!



COMPETITIVE FIRE HOSE
Less material — less wear

BOSTON FIRE HOSE
More material — far longer wear!

MORE OF THE FINEST YARNS MAKES BOSTON FIRE HOSE WEAR FAR LONGER —yet it handles and stores easily!

Common sense tells you: the craze for lightweight hose can go to extremes. You can sacrifice wear for weight. Take out material, and you lose durability.

So, we state proudly—BOSTON Fire Hose IS heavier. Because the extra weight is in the warp yarns. You get more wear for your money.

See your BOSTON agent or write to BOSTON for free descriptive literature

BOSTON FIRE HOSE

BOSTON WOVEN HOSE & RUBBER COMPANY
DIV. OF AMERICAN BILTRITE RUBBER CO. INC.
BOSTON 3, MASS.

ORIGINATORS OF CIRCULAR WOVEN FIRE HOSE

AT THE IAFC CONFERENCE, BOOTH #44

Chicago chooses Hi-Ranger again

to fight fire . . . save life . . . protect property

In 1959, the Chicago Fire Department purchased Hi-Ranger "Snorkels" for what proved to be a major break-through in fire fighting tactics. Hi-Ranger "Snorkels" proved so successful in fire fighting and rescue operations that Chicago has chosen Hi-Ranger again. Your city too, can have this kind of protection. Hi-Ranger has more experience in the design of "Snorkel" towers than any other designer or manufacturer. Let this experience work for your city NOW. A Hi-Ranger "Snorkel" representative is little further away than your telephone. We welcome your call or your letter of inquiry.

FILL IN AND RETURN THIS COUPON FOR FULL DETAILS ON HI-RANGER "SNORKEL"

Name _____

Position _____

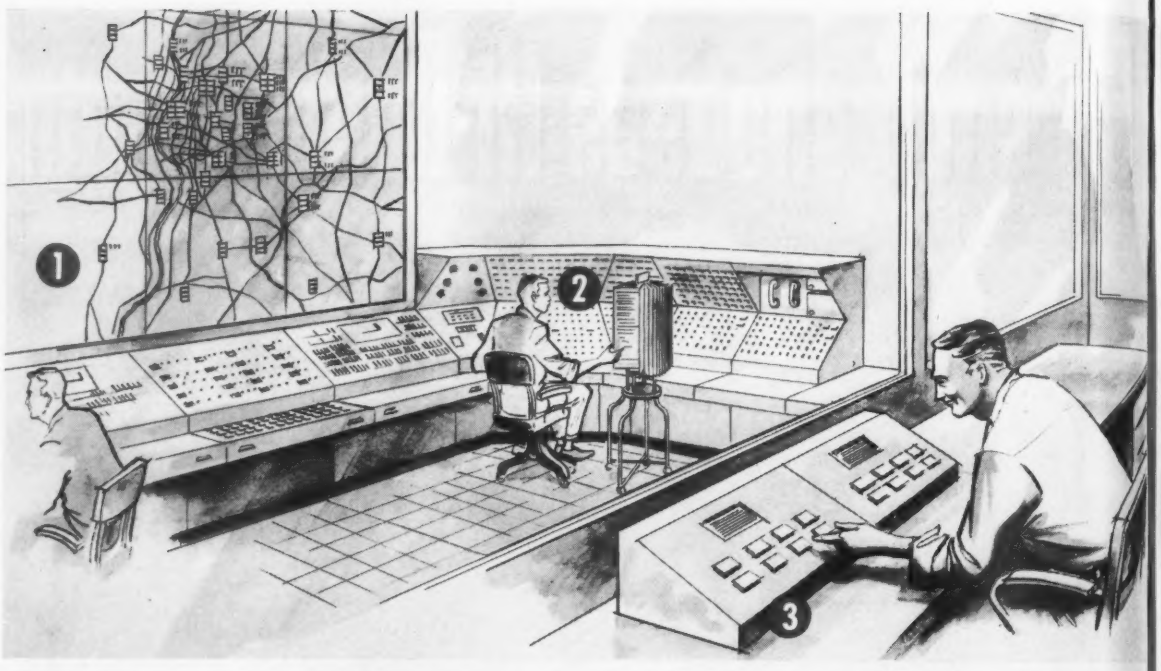
Street _____

City, State _____

HI-RANGER "SNORKEL"

MOBILE AERIAL TOWERS, INC.

1730 NORTH HARRISON STREET, FORT WAYNE, INDIANA



NOW—co-ordinated fire control for the expanding metropolis

GRS Master Dispatch System gives YOU effective command of every situation through the co-ordinated control of all facilities

A whole new concept in fire control, the GRS Master Dispatch System co-ordinates all your metropolitan fire control facilities . . . providing accuracy despite the complications of the expanding metropolis.

1. Your LOCATER MAP shows the entire metropolitan area. Locates fire houses and equipment. Identifies status of equipment as In Quarters, On Assignment, On Air, Off Duty, or Fill In. Other arrangements are possible to meet your special needs.
2. Your DISPATCHING CONSOLE integrates all dispatch and communication functions including multiphone and radio-telephone circuits; alarm and dispatch systems; recording and filing facilities.
3. At your COMMAND STATION you can monitor all communications. You can view the Locater Map as its coded lights instantly acknowledge your deployment of equipment.

RESULT: *the right equipment to the right place when it's vitally needed.* GRS Master Dispatch System gives you the ultimate in co-ordinated control; gives your community a new level of fire protection. To your departmental staff it means speed and accuracy . . . the convenience of easier operation . . . and peace of mind.

Each GRS Master Dispatch System is built to the specific needs of the area it serves. The system illustrated was designed to meet the needs of Rochester and the County of Monroe, New York.

Your new GRS Master Dispatch System will be designed, built and installed by General Railway Signal Company, for over fifty years manufacturers of highest quality dispatch and control equipment.

Send for complete information.

The GRS Master Dispatch System Is Another Development of

THE ELECTRONIC CONTROL DIVISION

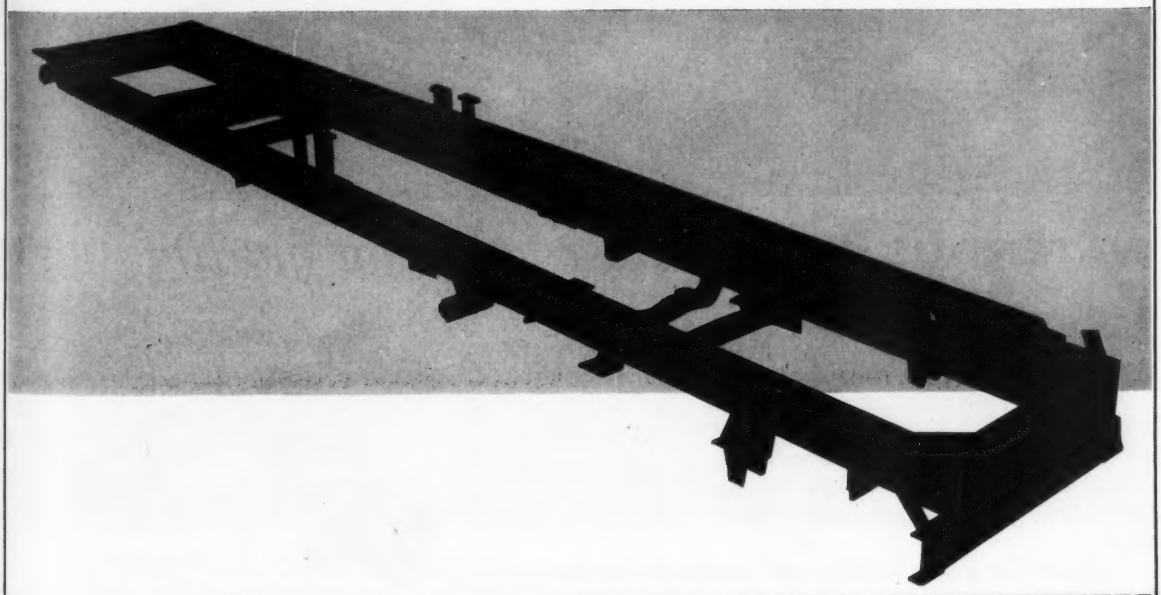
GENERAL RAILWAY SIGNAL COMPANY

ROCHESTER 2, NEW YORK

3071

Seagrave "Z" type frame

1. Extra strong, rigid and safe. All welded construction.
2. Rugged, non-heat treated steel.
3. Full 9⅛-inch depth for its entire length.
4. Wider spaced front spring centers.
5. Wide front treads.
6. More rear tire to spring clearance.
7. Better steering stability.
8. Easier servicing of major chassis components.



MAIL THIS COUPON

THE SEAGRAVE CORPORATION, COLUMBUS 7, OHIO. Please send complete information on:

☐ CAB-FORWARD ☐ CONVENTIONAL ☐ AERIALS ☐ PUMPERS ☐ OTHER_____

Name ..... Title.....

Address ..... FE 8-60

KING-SEAGRAVE LTD., WOODSTOCK, ONT.

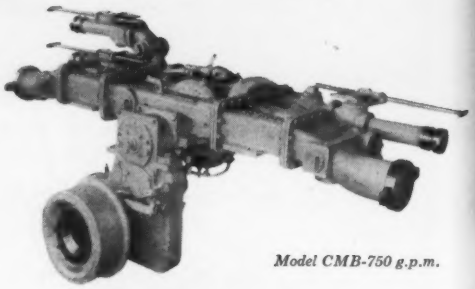
STOP IN AND VISIT US IN BOOTH 32 DURING THE I.A.F.C. CONVENTION

WATEROUS MEANS *hair-splitting quality*

The dependability of WATEROUS fire pumps is assured by holding tolerances of 1/10,000 of an inch or less on gears and other vital pump components; that's equivalent to splitting a human hair thirty ways!

Here a skilled WATEROUS craftsman performs one of several inspections on the helical gear of a Model CM pump. Precision crown-shaving of constant-mesh helical gears eliminates noise associated with more common spur gears.

Precision fire pump building and testing by WATEROUS means quality-smooth operation and much longer life.



Model CMB-750 g.p.m.

For more information about dependable WATEROUS fire pumps, write:

WATEROUS COMPANY

80 East Fillmore Ave., St. Paul 7, Minnesota, Dept. 3F12

Waterous SINCE DEPENDABLE 1886

You are invited to see and hear more about Waterous quality in booths 33 and 34 at the 84th Annual I.A.F.C. Convention, September 12-15 at the Community War Memorial, Rochester, New York.

NO CHOKING HERE!!!

Photo (right) from Kress fire in Denver shows portable Super Vac unit exhausting smoke into alley so firemen can enter. Where there's smoke, there's a Super Vac.

ALL FIREMEN know they can fight a fire better if they can see it. By exhausting the smoke from the area—FAST—they can get to the heart of the blaze, speed rescue operations, save lives and property. Super Vac Smoke Ejectors rid the fire area of smoke and fumes by the powerful vacuum action from specially designed blades. As a blower, Super Vacs force a tremendous blast of fresh air into the smoke-congested area to reduce combustion and asphyxiation dangers. Fire Departments throughout the United States and many foreign countries depend upon Super Vacs for complete controlled ventilation and smoke elimination.

Compare these features and advantages:

- Unique patented perfect spiral air screw — does not chop air like ordinary fans.
- No dead spots — creates suction over entire face of housing.
- Prolonged motor life — blade forces air over motor surface to reduce motor heat.
- Now four sizes — 12" - 16" - 20" - 24".
- AC or DC, regular or explosion-proof motors.
- Running board mounts and hanger unit available.
- Choice of red, white, or metallic green baked enamel finish.

Read the industry standard: Booklet 58, written by firemen for firemen.

See the Super Vacs at the Convention. **Contact** us for fire equipment dealer nearest you.

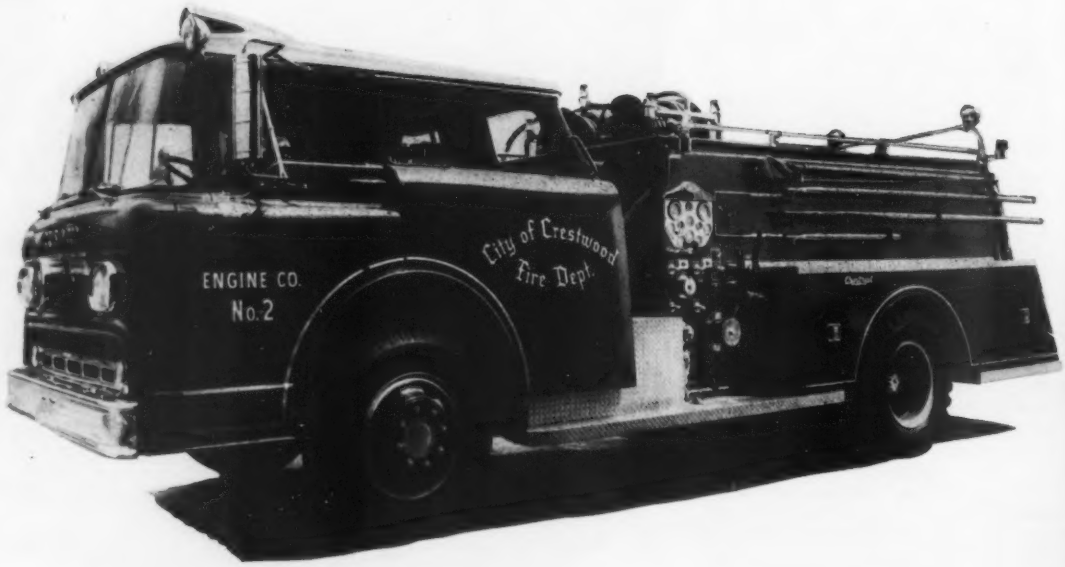
SUPER VAC

SUPER VACUUM MANUFACTURING COMPANY, INC.
319½ East 17th Ave., Denver 3, Colo. • TAbor 5-4577

MORE VALUE...MORE WAYS...

CENTRAL ENGINEERING CAN DRASTICALLY CUT YOUR FIRE TRUCK COSTS...

Because...



1 Central's Engineered production allows the use of highest quality components....

Example: Lifetime copper piping used throughout; full flow, quarter-turn, bronze ball valves; Waterous Electro-Matic fire pumps; Hannay hose reels and accessories; etc.

2 Central builds on the latest commercial chassis . . . which provide ample power reserves for all pumping capacities — 500 through 1250 GPM.

Example: Crestwood, Missouri pumper illustrated — 1250 GPM on Ford C-850 chassis with 270 HP engine.

CRESTWOOD SELECTS CENTRAL AGAIN!

Above: 1250 GPM Class A Pumper recently delivered to the City of Crestwood, Missouri, one of the fastest growing communities in St. Louis County. Truck features 7-man, tilt-forward cab for maximum accessibility and servicing. Over 100 cubic feet of lighted, weatherproof compartment space. Two electric rewind hose reels. Independently gated suction. 500 gallon, rust-proofed, cushion-mounted booster tank. Electromatic pump. Truly — one of the finest trucks ever produced!

Central can build 250 to 1250 GPM pumpers to exacting specifications. Prompt deliveries. Make and model chassis required may be secured from the local dealer of your choice if desired.

CENTRAL FIRE TRUCK CORPORATION

15 minutes West of St. Louis on Highway 100
MANCHESTER, MISSOURI • JEfferson 3-0680

DUO Safety FIRE LADDERS

Now in FOUR GREAT SERIES

With DUO-SAFETY Exclusive Tongue and Groove Construction

Hooks or Guides Injure Hands! Back-knifing!

Now, there's a Duo-Safety Ladder for every budget...for every use. The new Series 1200—an intermediate ladder—fills out the line to offer you a bigger choice of better ladders. Check the specifications below...you'll find the ladder for your requirements. Write for more information and prices.

Choose the Series to fit your needs!

SERIES 1000	For Pumper Use	24′ to 30′	[2 3/4″ CHANNEL RAIL
SERIES 900	For Pumper and Service Trucks	24′ to 40′	[3 1/4″ CHANNEL RAIL
SERIES 1200	For Service Trucks	35′ to 55′	[3 3/4″ CHANNEL RAIL
SERIES 500	For Service Trucks	10′ to 60′	TUBULAR RAIL

Including the new

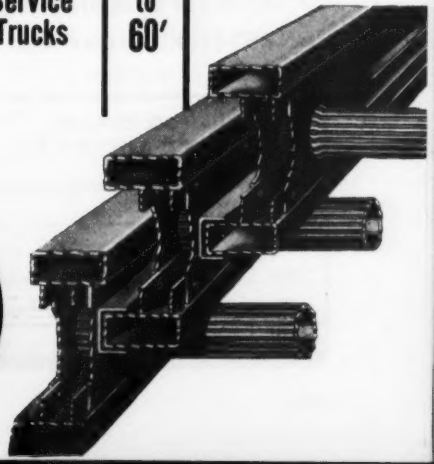
INTERMEDIATE SERIES 1200

The new 1200 Series at budget fitting prices in the famous Duo-Safety line is an intermediate ladder to take care of a range of sizes where requirements are not sufficiently severe to necessitate buying the Duo-Safety heavy duty 500 Series tubular rail!

Write for complete information and prices!

For Great Strength, Extraordinary Safety!

Adapted nationally by fire departments as standard ladder equipment, the 500-A Series represents perfection of ladder design. Light weight, greater strength and extraordinary safety are incorporated into the Tubular Rail Construction of this great ladder. Available in all standard ladder sizes 10′ to 60′.



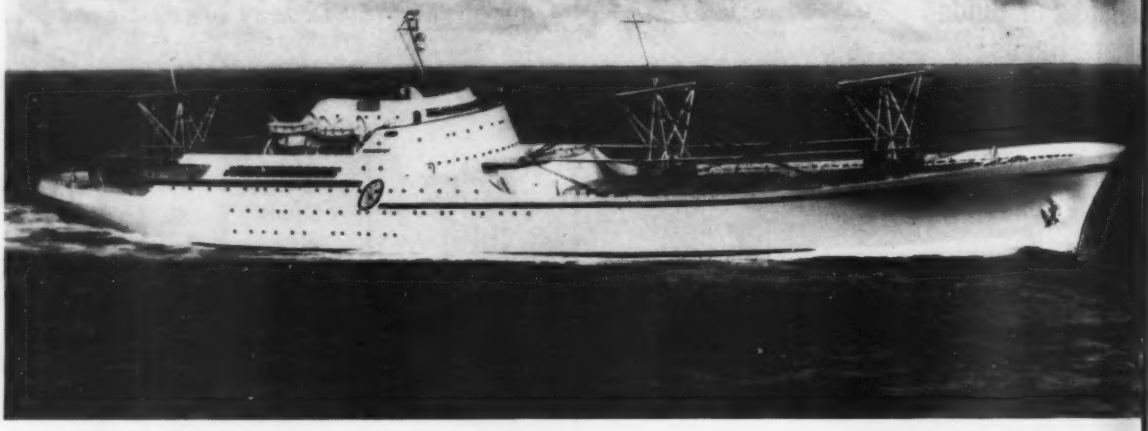
DUO SAFETY LADDER CORP.

3 WEST NINTH AVENUE • OSHKOSH, WISCONSIN

Canada: La France Fire Engine and Foamite, Ltd., Ontario

"EZflex" Fire Hose...

For the First Atomic Merchant Ship!



GOODALL'S "EZflex" PROVIDES STEM-TO-STERN PROTECTION FOR "N. S. SAVANNAH"... *World's First Nuclear-Powered Cargo Vessel*

A logical assignment... a truly modern fire hose guarding the most modern ship afloat! "EZflex" is as far removed from old-fashioned fire hose as the "Savannah" is from a Mississippi side-wheeler ...stronger, lighter in weight... with a full-length *reinforced* high-tensile tube and highly abrasion-resistant jacket that fights snagging, puncturing, and bursting to a standstill!

Check all the reasons why "EZflex" was chosen for the "Savannah"! Mail coupon for catalog.

NOTE: For a NEOPRENE covered hose of same basic construction as "EZflex", get the facts about "RED-FLEX". Water- and mildew-proofed.

GOODALL RUBBER COMPANY
454 Whitehead Rd., Trenton 4, N.J.
Gentlemen:
Please send copy of Fire Hose Catalog FH-59.

Company_____
Address_____
City_____ Zone____ State_____
Att. of_____ Title_____

Standard of Quality—Since 1870

HOSE · BELTING · FOOTWEAR · CLOTHING AND OTHER INDUSTRIAL RUBBER PRODUCTS

GOODALL *Rubber Company*

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.
BRANCHES AND DISTRIBUTORS THROUGHOUT THE UNITED STATES
IN CANADA: GOODALL RUBBER CO. OF CANADA LTD., TORONTO

Sold to Gastonia Fire Dept., Gastonia, N. C. by Mr. George McLaughen.

NEW!-A FIVE-MAN "CAB AHEAD" PUMPER on HOWE's FAMOUS CUSTOM DEFENDER CHASSIS!

"CAB AHEAD" design provides maximum maneuverability, unobstructed vision and ample equipment storage. Available either open semi-cab or closed canopy cab.

A history of four generations in the construction of fire apparatus has given the HOWE organization the experience and vision to build the finest fire trucks in the fire fighting field.

The scope of HOWE's operation is great enough that they can economically build *your* fire truck customized to meet the needs of *your* community.

Contact the HOWE representative in your area or write direct to the factory for free literature regarding the specific truck you need or covering all types of fire fighting equipment and supplies.

Features of the Gastonia "Cab Ahead" Pumper

- Improved air flow for engine cooling
- Modern, curved, 2-piece windshield
- Dependable Waukesha, 817 cu. in., 145GZB, 300 HP engine
- 160" wheelbase
- Equipped with Waterous Electromatic CM-1000, 2-stage centrifugal pump
- Two running board compartments each side
- Booster hose reel mounted in compartment at rear (See view at left for seating arrangement, hose storage, compartments, and spill-proof booster tank filler.)

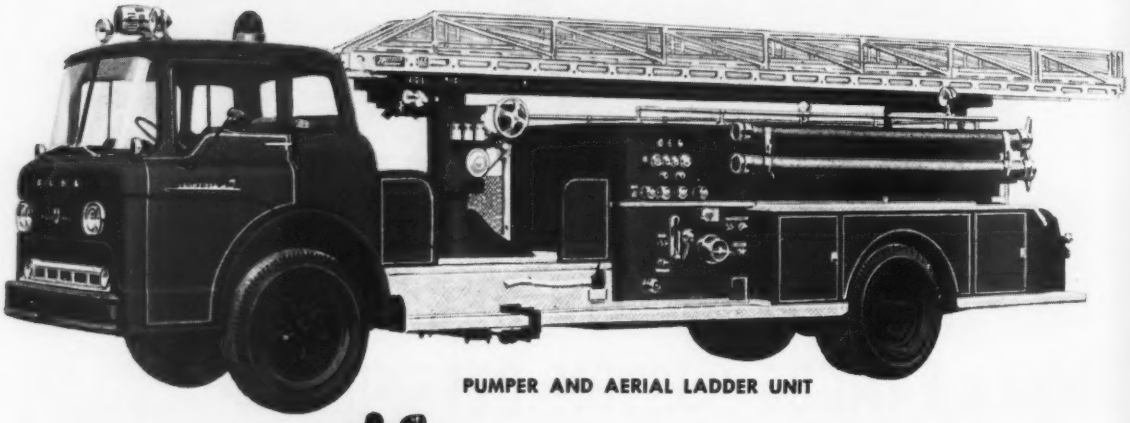
HOWE

"dependable fire apparatus since 1872"

FIRE APPARATUS COMPANY

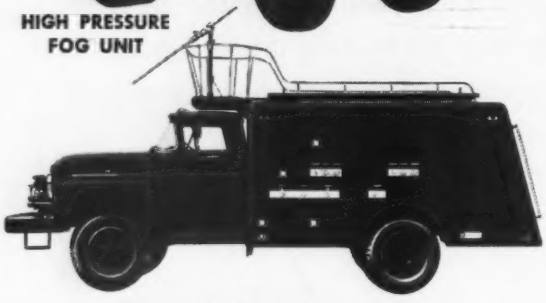
Dept. FE-860 • Anderson, Indiana, U. S. A.

There's a FORD chassis for every FIRE APPARATUS NEED



PUMPER AND AERIAL LADDER UNIT

HIGH PRESSURE FOG UNIT



DRY CHEMICAL UNIT

Ford's 1960 Trucks, with GVW's from 5,000 lb. to 36,000 lb., are offered in a wide variety of models. Each is designed to further improve the efficiency of today's highly mechanized fire fighting organizations.

You can choose from 36 different space-saving Tilt Cab models for maximum maneuverability in congested area work. Over 100 Conventional Ford models are available with the greatest variety of chassis options ever. Now these popular units that have won the confidence of fire fighters across the nation can be adapted to do even more jobs for you, better.

The 1960 Ford line features 10 modern Short Stroke engines, ranging in size from 223 to 534 cubic inches, for dependable power to pump from 200 to 1250 GPM. This broad engine choice in over 300 models enables you to select the Ford unit that's precisely tailored to your needs.

Visit the

FORD EXHIBIT

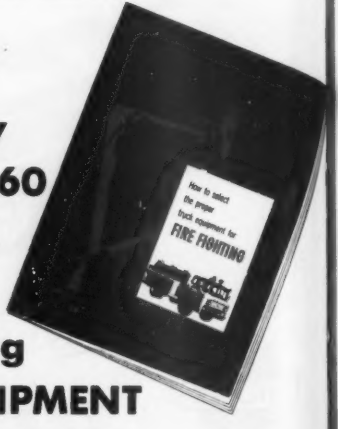
87th Annual Conference

International Assoc. of Fire Chiefs

Community War Memorial, Rochester, N. Y.

Booths 130-131-132, September 12-15

Get your *FREE* copy of this 1960 reference guide for purchasing FIRE EQUIPMENT

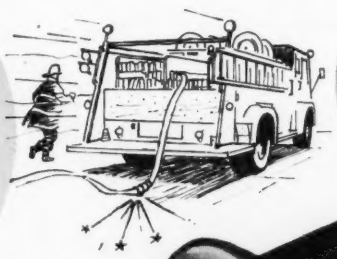


ELKHART X-5 X-TRUDE

THE NEW SUPER STRENGTH COUPLING

WITH FULL RIB REINFORCEMENT

Full rib reinforcement. Note how added reinforcement of coupling is gained by continuous bead surrounding the coupling. This reinforcement is in addition to the strength already achieved by use of the new X-5 alloy.



X-5

New brass alloy developed to Elkhart specification is at least 25% stronger than used in former lightweight couplings.

Larger lugs for easier and faster hook-up.

Increased tensile strength of X-5 alloy makes coupling ideal choice for higher pressures required for expanding Dacron hose in coupling—will not deform.

See this new Coupling at I. A. F. C.

No. X-330 X-TRUDE®

Available in 1-1/2" and 2-1/2" size

Ever on the alert for better fire fighting products . . . Elkhart's new X-Trude coupling hails one of the greatest coupling improvements we have ever announced. It's a tough, rugged, lightweight coupling made of the new X-5 brass alloy that is at least 25% stronger than that used in previous lightweight couplings. Plus the added strength of this exclusive new alloy we have further strengthened the coupling by the continuous reinforcing bead that surrounds both the male and female tailpiece. The coupling also features Higbee cut non-cross threads and indicator slot on Slidewell or rocker type lugs. *Now available for immediate shipment.*

ELKHART BRASS MFG. CO., Inc., Elkhart, Ind.

More than half a century of fire fighting progress

Howdep

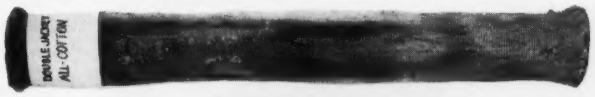
owdependable is your fire hose?

Trained firemen don't *mean* to abuse hose. But when life and property may hang in the balance, zealous crews have but one aim: to get the blaze under control. Hose dependability is of utmost importance.

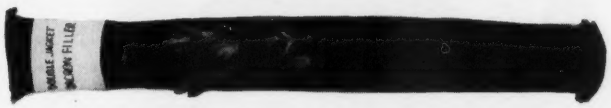
That's why experienced fire chiefs prefer Hewitt *All-Dacron* fire hose. It's one hose that doesn't have to be babied and will still do its job.

How's this for a torture test?

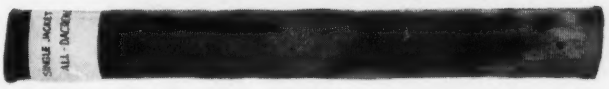
A.



B.



C.



Three pieces of different hose construction were dragged 50 miles behind a car through city streets to test abrasion resistance. The results:

Construction	Outer Jacket	Inner Jacket
A. All-cotton	Worn through	Signs of wear
B. Dacron filler	Worn through	Signs of wear
C. All-Dacron	Slight scuffing	No signs of wear

Advantages:

All-Dacron over all-cotton:

- Three times as strong
- 20% lighter
- 80% less water absorption
- Great flexibility
- Increased acid resistance

For fire hose information consult your H-R representative or write Hewitt-Robins, Stamford, Connecticut. Ask for Bulletin 8-52.

HEWITT-ROBINS

Because H-R manufactures all types of municipal and industrial fire hose... it pays to specify Hewitt-Robins.

Fyr-Fyter

offers you these Fire Department products

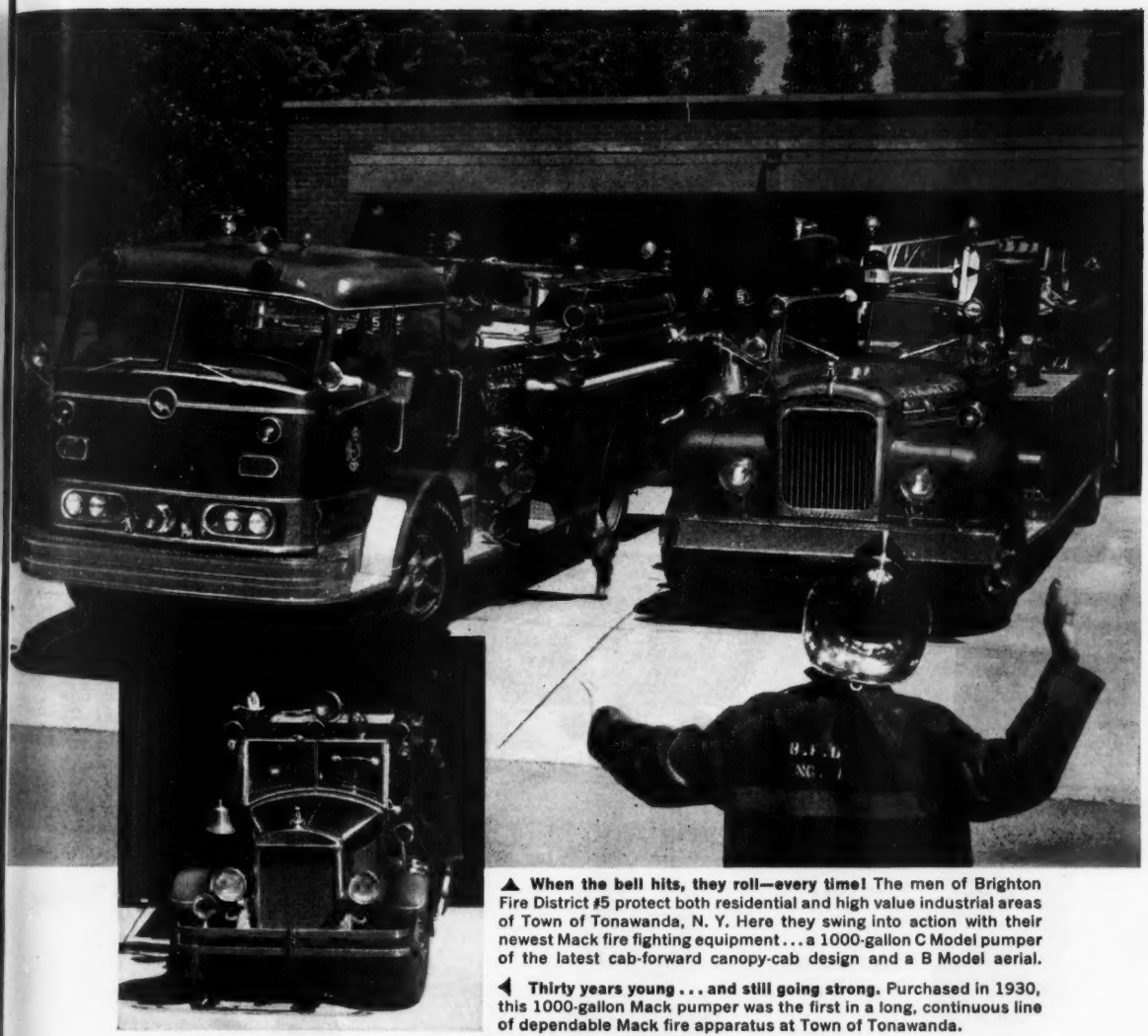
...and 1174 more!

Your largest single source for all municipal, industrial and commercial fire department equipment is Fyr-Fyter, with more than 1200 different items to select from! To name only a few of these high-quality products, the complete Fyr-Fyter line includes approved fire hose, Wooster brass goods, nozzles and couplings, portable fire extinguishers, clothing, pumps, ladders, warning and signaling devices, first-aid kits, masks, breathing apparatus, fire alarms, etc. Your Fyr-Fyter representative is thoroughly trained and experienced in fire department problems . . . can offer valuable counsel and make equipment recommendations without prejudice. With Fyr-Fyter as your single source of supply, you place one order and pay one bill, thereby eliminating the complicated paper work involved in dealing with many suppliers. Write today for free catalog describing 1200 items to The Fyr-Fyter Company, Dayton 1, Ohio.

Fyr-Fyter

products of THE FYR-FYTER COMPANY

Branches: Atlanta, Baltimore, Boston, Chicago, Dallas, Dayton, Detroit, Los Angeles, New York, Newark, Philadelphia, Pittsburgh, Portland, Rochester, San Francisco, Toronto (Ontario). Representatives and Distributors in all principal cities.



▲ **When the bell hits, they roll—every time!** The men of Brighton Fire District #5 protect both residential and high value industrial areas of Town of Tonawanda, N. Y. Here they swing into action with their newest Mack fire fighting equipment . . . a 1000-gallon C Model pumper of the latest cab-forward canopy-cab design and a B Model aerial.

◀ **Thirty years young . . . and still going strong.** Purchased in 1930, this 1000-gallon Mack pumper was the first in a long, continuous line of dependable Mack fire apparatus at Town of Tonawanda.

30 YEARS of the finest fire protection—backed by Macks

A spanking new 1000-gallon Mack pumper was the first piece of Mack fire apparatus purchased by Brighton Fire District #5, Town of Tonawanda, N. Y. The year—1930. As fire protection needs grew, Mack after Mack joined the ranks of this growing fire fighting organization. The recent addition of still another 1000-gallon Mack pumper rounds out a full thirty years of all-Mack-equipped fire protection, with a total to date of five pumpers and one aerial, and an enviable record for dependable fire fighting service to the rapidly expanding residential community and its industrial neighbors.

From the finest line of exclusive fire apparatus components in the industry, Mack can custom-build the exact apparatus you require; conventional or cab-forward design; with the transmissions and gear ratios exactly matched to your terrain; with generous locker space; and with the extras needed to cope with any fire fighting problem.

When increasing fire protection needs of your area call for better-built, better-designed apparatus, call on Mack. Find out why Mack apparatus is known everywhere as the best-performing, most dependable equipment in the world today. Mack Fire Apparatus, Allentown, Pennsylvania. Mack Trucks of Canada, Ltd., Toronto, Ontario.

7879

MACK

FIRST NAME FOR

FIRE APPARATUS

COMPLETE LINE OF PUMPERS—500 to 1250 GPM...SQUAD AND HOSE WAGONS...AERIALS 65' to 146...COMBINATION LADDER TRUCKS

Insist on the dependable operation of...

MUELLER® FIRE HYDRANTS

AWWA Improved Post Type 4¼", 4½", 5¼", 6¼" Valve Opening Two or Three Way
AWWA Standard Flush Type 4¼" or 5¼" Valve Opening Two or Three Way
Post Type 2⅛" Valve Opening One or Two Way
Flush Type 2⅛" Valve Opening One Way

■ Just one fire hydrant that does not function when needed will disrupt your entire fire protection network.

One way to assure the dependable operation of every hydrant in your system is to insist upon an effective hydrant inspection, maintenance *and replacement* program. With such a program, valuable time is not lost connecting and disconnecting hose to an inoperable hydrant.

To be doubly sure that each hydrant will work every time it is needed, insist on precision-engineered Mueller Fire Hydrants — quality hydrants with dependability "designed-in".

Compression-type main valves, automatically-force-flushed drain valve mechanisms and "O" ring stem seal are just a few of the quality features found in *all* Mueller Fire Hydrants. These features are typical of the great attention to detail in research, design and engineering that becomes a part of every Mueller product.

The hydrants shown here are just a part of the full line of fire hydrants produced by Mueller Co. for municipal, industrial and private fire protection systems.

Write for complete information and specifications.

Full line of inlets available for all hydrants

MUELLER CO.
DECATUR, ILL.

Factories at: Decatur, Chattanooga, Los Angeles
In Canada: Mueller, Limited; Sarnia, Ontario

See these fine products at the I.A.F.C.

ELKHART CONSTANT FLOW MYSTERY NOZZLES

SELECT-O-FLOW

Elkhart Constant Flow Mystery Nozzles offered in a complete line of hand nozzles for ¾"-1", 1½" and 2½" hose.

JUMBO

Elkhart Jumbo SOS Mystery Nozzles with Constant Flow feature now available in 500 and 1000 G.P.M. sizes.

Actual unretouched photographs of SFL-200 SOS in action. Note negligible effect on engine pressure of various patterns. Nozzle is set in the 95 G.P.M. position and is operating at 100 p.s.i. nozzle pressure. **1.** Straight stream. **2.** Narrow fog. **3.** Wide fog.

Select-O-Flow *CONSTANT FLOW*

mystery nozzle

1"

No. SFS-200 SOS-R

¾"-1" SELECT-O-FLOW BOOSTER NOZZLE. The only nozzle designed for both ¾" and 1" booster hose. Five gallonage positions 10-15-20-25-30 G.P.M. plus exclusive FLUSH position. Operates easily at highest, as well as the lowest, pressures used in the fire service. Rigid base only.

1½"

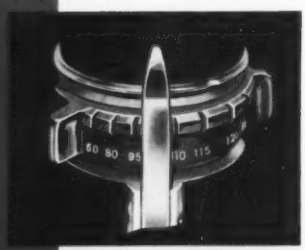
No. SFL-200 SOS

1½" SELECT-O-FLOW LEADER LINE NOZZLE. The only 1½" nozzle with seven gallonage positions 60-80-95-110-115-120-125 G.P.M. No screen required. Underwriters' Approved.

2½"

No. SF-200 SOS-R

2½" SELECT-O-FLOW NOZZLE FOR USE ON PLAYPIPE. Exclusive ball construction prevents nozzle from snapping shut. The only 2½" nozzle with six gallonage positions 125-150-175-200-225-250 G.P.M.



CONSTANT FLOW

The Select-O-Flow delivers the same gallons per minute whether in straight stream, narrow or wide fog. No more line surges. No more varying engine pressures. Easier on men and equipment. Ideal for use with Eductors which demand a constant flow of water for efficient operation.

VARIABLE GALLONAGE

The only constant flow nozzle on which the gallonage can be varied without shutting down the line—simply dial desired gallonage. Gallonage ring is securely locked in chosen position and cannot accidently be changed when adjusting stream pattern.

PATENTED FOAM STEM CONSTRUCTION

Foam or Wet Water instantly available without changing nozzles. Gives the highest foam expansion of any peripheral jet nozzle. Further, when using plain water the impinging jets give an additional breakup of water particles aiding the teeth in producing a dense cone of fog. 1½" and 2½" sizes only.

FLUSHING FEATURE

No screens to clog—merely by turning gallonage ring nozzle can be cleared of leaves, etc., without shutting down line.

NEW MATERIAL

In order to lighten the nozzles for easier handling many parts of these nozzles have been made of a new material—harder than a file, twice as strong as brass yet only ⅓ the weight.

RAISED STREAM INDICATORS

All nozzles have Elkhart's exclusive raised Braille-like pattern indicators that are distinguishable in the dark or in smoke.

ADJUSTABLE SEAT

Exclusive adjustable bonded seats make it possible to adjust for wear without disassembling nozzle.

All Constant Flow Mystery Nozzles feature larger handles, new synthetic bumpers and the original Elkhart Mystery Nozzle teeth.

ELKHART BRASS MFG. CO., INC., Elkhart, Indiana

More than half a century of fire fighting progress

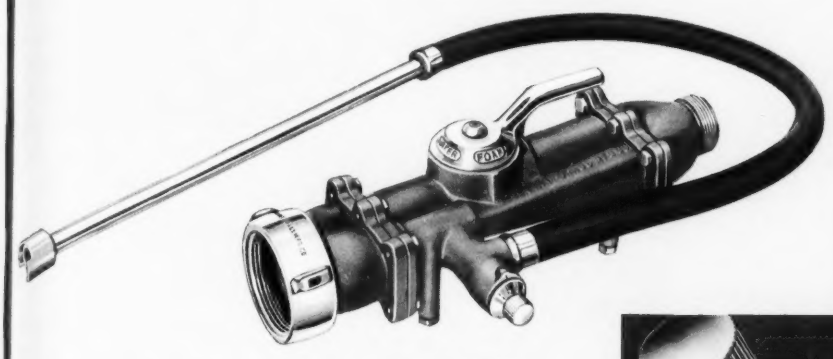
Elkhart Eductor

WITH SFL-200 SOS

For use with wet water—foam

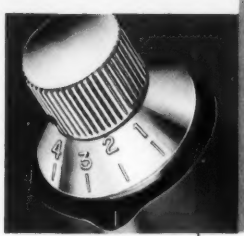
The newest and most efficient team for wet water—foam, the 1½" SFL-200 SOS and the No. 240 by-pass Eductor. When used with a good penetrant foam liquid will give an amazingly high expansion ratio. This expansion is due to Elkhart's exclusive patented stem construction. The No. 240 Eductor made in 60 and 95 G.P.M. sizes features an adjustable bonded seat and a metering valve for adjusting the percentage of foam liquid.

This metering valve eliminates the possibility of the metering device sticking and also gives any percentage of foam liquid desired between 0 and 6%. Merely turn the dial until you get the foam you want—no holes to line up—no possibility of cutting off the supply of foam. The only Eductor made on which you can change the foam setting without interfering with the flow of foam. This Eductor can also be used with protein type foam. Eductor made with 2½" or 1½" swivel inlets and 1½" rigid male outlet. Also can be supplied with 1½" tapered iron pipe females both ends for permanent mounting on fire apparatus. *Contact our Engineering Department for special installations.*



No. 240 Eductor

The No. 240 Eductor is available in 60 or 95 G.P.M. capacity—The longer fully machined waterway is designed to give the lowest friction loss of any Eductor available to the fire service.



No. SFL-200 SOS

The SFL-200 SOS Select-O-Flow Constant Flow Mystery Nozzle is perfectly mated with the No. 240 Eductor for wet water —foam application.

Note how dial can be set between percentage indicators for a more exact selection of foam liquid proportioning.

REFERENCE CHART

Select-O-Flow Constant Flow Mystery Nozzles

Catalog No.	Size	Gallonage	Length	Wt.-Lbs.
SFS-200 SOS-R	¾-1"	10 to 30	6½"	4¼
SFL-200 SOS	1½"	60 to 125	7"	5½
SFL-200 SOS-R	1½"	60 to 125	6¾"	5⅜
SF-200 SOS	2½" for playpipe	125 to 250	8"	7¼
SF-200 SOS-R	2½" for playpipe	125 to 250	7¾"	7
DSF-200 SOS	2½" direct connection	125 to 250	11¼"	10
DSF-200 SOS-R	2½" direct connection	125 to 250	10¾"	9¾
SF-800 SOS	2½" with playpipe	125 to 250	18¼"	17¾
SF-800 SOS-R	2½" with playpipe.	125 to 250	17¾"	17½
240-95 GPM	2½" or 1½" inlet—1½" outlet	95	16"	21¼
240-60 GPM	2½" or 1½" inlet—1½" outlet	60	16"	21¼

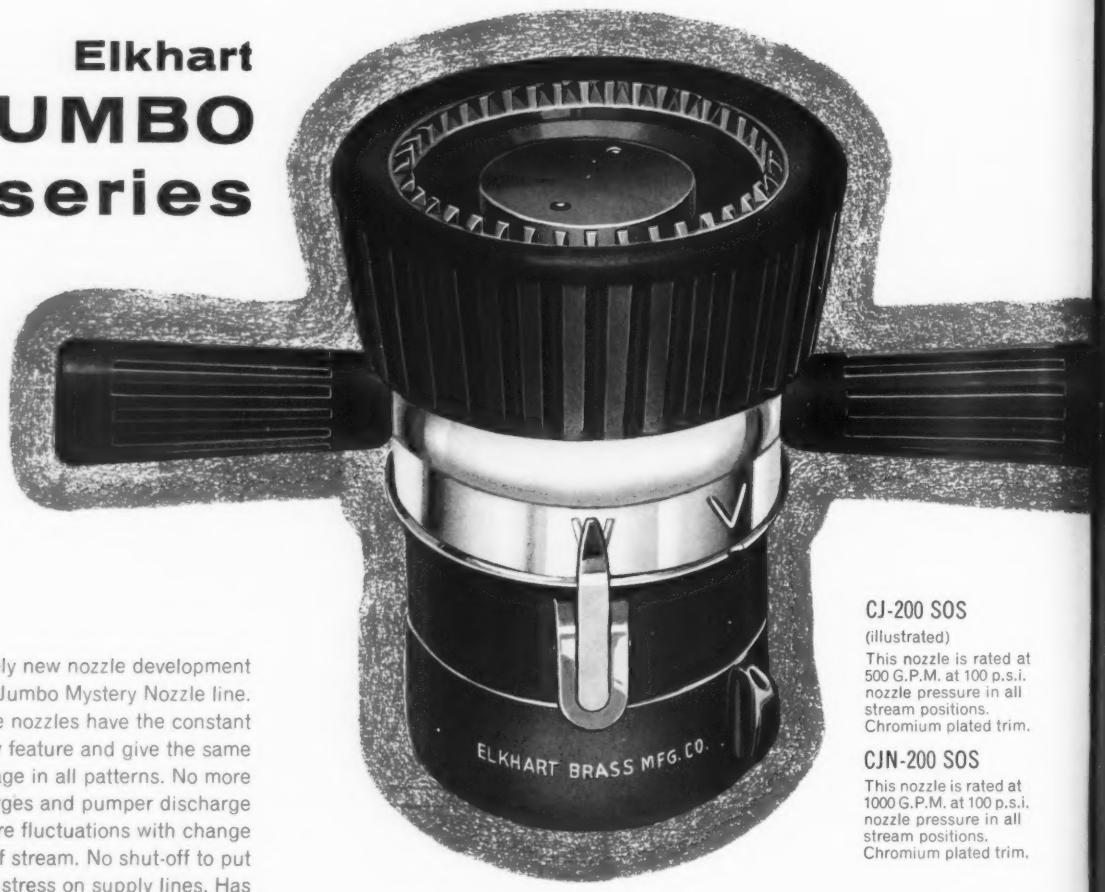
Note—Select-O-Flow Nozzles with "R" suffix have rigid base—others have swivel base. Available chromium plated or polished brass.

ELKHART BRASS MFG. CO., INC., Elkhart, Indiana

More than half a century of fire fighting progress

Select-O-Stream *CONSTANT FLOW* mystery nozzles

Elkhart JUMBO series



CJ-200 SOS
(illustrated)
This nozzle is rated at 500 G.P.M. at 100 p.s.i. nozzle pressure in all stream positions. Chromium plated trim.

CJN-200 SOS
This nozzle is rated at 1000 G.P.M. at 100 p.s.i. nozzle pressure in all stream positions. Chromium plated trim.

An entirely new nozzle development in the Jumbo Mystery Nozzle line. These nozzles have the constant flow feature and give the same gallonage in all patterns. No more line surges and pumper discharge pressure fluctuations with change of stream. No shut-off to put undue stress on supply lines. Has Elkhart's exclusive Braille-like raised stream indicators. Lightweight construction—made of a new material—harder than a file, twice as strong as brass yet only ⅓ the weight. Equipped with an exclusive swivel base so stream indicators are always on top. Jumbo Nozzles have the original Elkhart Mystery Nozzle teeth and new synthetic bumper.

Catalog No.	Size	Gallonage	Length	Wt.-Lbs.
CJ-200 SOS	2½"	500	6⅛"	4¾
CJN-200 SOS	2½"	1000	7½"	7¼

ELKHART BRASS MFG. CO., INC., Elkhart, Indiana
More than half a century of fire fighting progress

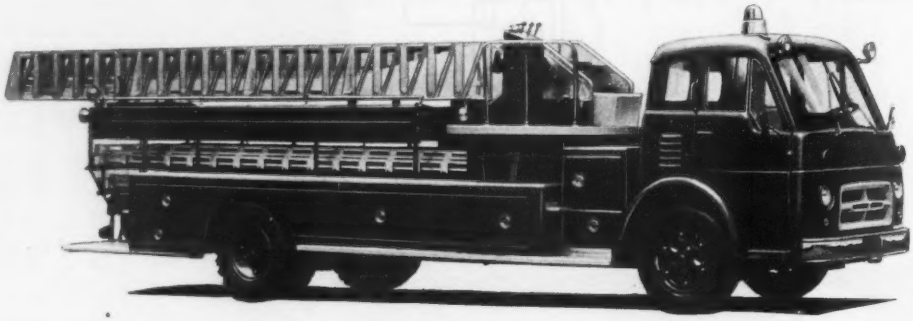
FIRST DEAL: *With your purchase*

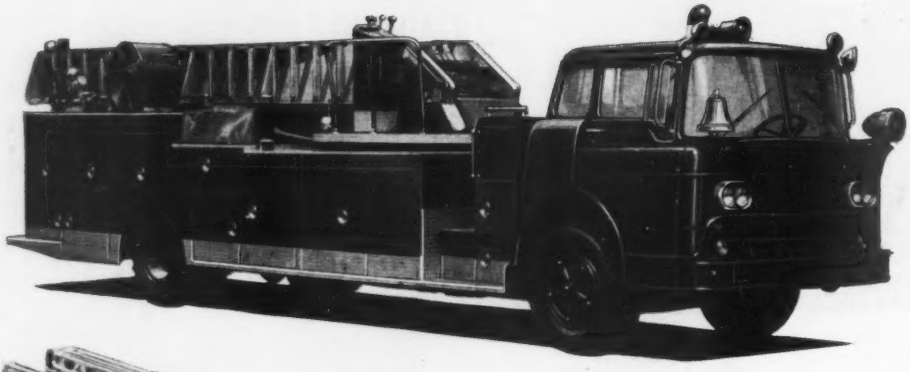
FIRST DEAL: *With your purchase of every Ansul Sentry 10 at the regular price of $66.00 we will give you FREE one 50 lb. pail of Ansul "Plus-Fifty B" Dry Chemical.*

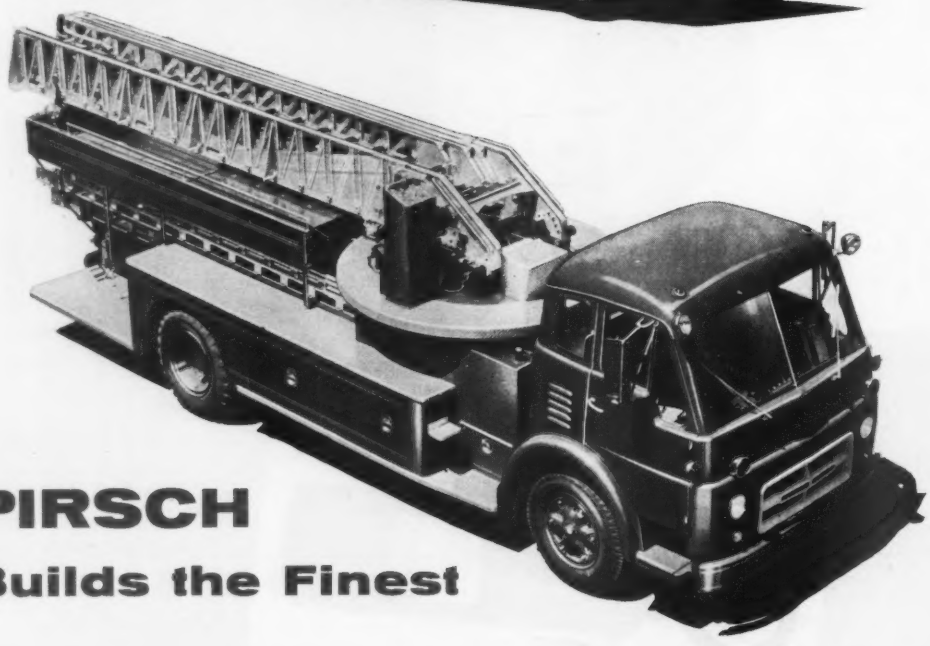
SECOND DEAL: *Each Ansul Sentry 20 that you purchase at the regular price of $81.00 entitles you to two FREE 50 lb. pails of Ansul "Plus-Fifty B" Dry Chemical.*

THIRD DEAL: *Three FREE 50 lb. pails of Ansul "Plus-Fifty B" Dry Chemical will be included with each Ansul Sentry 30 that you buy at $99.00.*

DEAL: Because ANSUL wants to acquaint you with the remarkable, advanced features of its new SENTRY Dry Chemical Stored Pressure Fire Extinguishers . . . because training for your people on real fires is an essential part of an effective fire protection program . . . we've arranged a special, combination deal. Between now and October 1, 1960 when you buy Ansul SENTRY fire extinguishers we will give you FREE our special "training package"—liberal extra quantities of Ansul "Plus-Fifty B" Dry Chemical which you can use in your own fire training program. With each SENTRY 10 we'll give you one 50 lb. pail of "Plus-Fifty B" Dry Chemical; with each SENTRY 20, two 50 lb. pails; and with every SENTRY 30, three 50 lb. pails. Each combination is yours for the price of the extinguisher alone. You can take advantage of any or all of these combination offers, as often as you wish, between now and October 1. To do so, call your local Ansul Man (he's listed in the "Yellow Pages") or write directly to ANSUL CHEMICAL COMPANY, Marinette, Wisconsin **ANSUL**







PIRSCH
Builds the Finest

Pirsch has specialized in producing quality fire department ladders for about three quarters of a century; you profit from this experience when you buy a Pirsch aerial ladder. In addition to the finest built, you get smooth, efficient hoist and ladder operation, ease of control and dependable performance.

Pirsch custom and commercial aerial ladder trucks are built in 65', 75', 85' and 100' sizes.

PETER PIRSCH & SONS CO. KENOSHA, WIS.

CONGRATULATIONS

IAFC

The International Association of Fire Chiefs is to be commended for the splendid work it is doing toward the advancement of the Fire Service.

The Bi-Lateral Fire Hose Company says:

"Every Fire Chief should be a member of IAFC"

Alabama, Tuscaloosa
Henry Ryan
37 Parkview Drive
Alaska, Spenard
National Supply Co.
2606 Seward Hwy.
California, Pomona
B & W Fire Equip. Co.
1057 Casa Hermosa Dr.
Connecticut, Westport
Orville A. Sawyer Co.
Bob Fosdick
P. O. Box 544
Florida, Jacksonville
W. Q. Dowling, Jr.
P. O. Box 6338
Illinois, Barrington
Great Lakes Fire Equip. Co.
M. Dalton—E. Simek
P. O. Box 148
Indiana, Indianapolis
Midwest Fire & Safety Equip. Co.
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P. O. Box 194

BI-LATERAL'S DISTRIBUTORS AND DEALERS throughout the country join the Bi-Lateral Fire Hose Company in their full co-operation with INTERNATIONAL at all times.

BI-LATERAL FIRE HOSE CO.
20 NORTH WACKER DR.
CHICAGO 6, ILLINOIS
Sustaining member of IAFC
In Canada
Bi-Lateral Fire Hose, Kitchener, Ontario

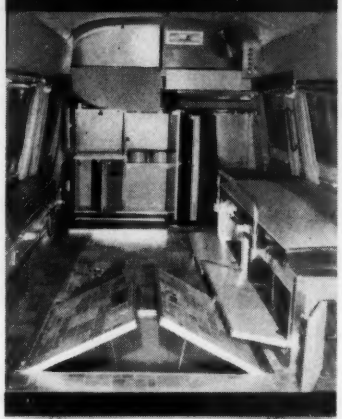
BOARDMAN BUILDS THE PUMPER YOU NEED!

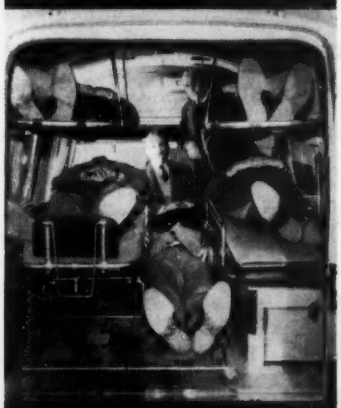
Firefighters in over 200 American communities have found that Boardman builds the pumper that suits their needs *best* . . . because Boardman builds to exact specifications! Boardman pumpers have the features and equipment you need, mounted on the standard chassis of your choice, for quick local service. Your choice of pumps—the Waterous 500 GPM one-, two- or three-stage or the Waterous 750 GPM two- and three-stage—assures the right capacity for your city's needs. And though your pumper will be custom-designed, you'll pay far less than a "custom-built price" at Boardman!

Let Boardman answer your city's fire alarm with the illustrated brochure, *Boardman Fire Fighters*, describing every pumper and tanker in their line. If your need is urgent, place a collect call for immediate details.

BOARDMAN PUMPERS

THE BOARDMAN CO
P. O. BOX 1152
Oklahoma City





a place for everything
(and everybody)
in the completely new

S&S PROFESSIONAL CADILLAC AMBULANCE

Roomier, ruggeder than any other unit . . . engineered for professional rescue men!

That's the all-new S&S Professional Ambulance for 1960, with loads of exclusives no other ambulance can match. Big, "working room" interiors . . . 5-patient capacity. More equipment compartments than any other ambulance. 54½" plus of inside headroom with full-opening (43" wide, 47" high) rear door. 5 Sola Ray lights. More oxygen equipment space. S & S high-strength box section steel construction.

Do yourself and your men a favor! Write today for complete specifications on the 1960 S & S Professional Ambulance . . . and the name of your nearby S & S distributor.

THE HESS & EISENHARDT COMPANY
Blue Ash Road, Cincinnati 42, Ohio

VOICE of the Fire Service

Like a high-power searchlight stabbing through the murk . . . new Super-Hailer transforms your commands into an *intense* 16-watt "sound-beam" . . . to *pierce through* severe adverse noise-levels. In good conditions, it can project your words . . . *like a harpoon* . . . over a mile. Most powerful, compact, "one-piece" portable voice system made. 16", 6¾ lbs., over all. "TP" (transistor-powered) amplifier runs on flashlight cells. Entire instrument waterproof!

Standard Audio Hailer puts you in command of the situation . . . and **saves your voice** from collapse. Used by more Fire and Industrial Safety Depts. than all other types of voice communications combined. 5¾ lbs. complete. "TP" (transistor-powered), runs on flashlight cells, projects speech over a half-mile radius.

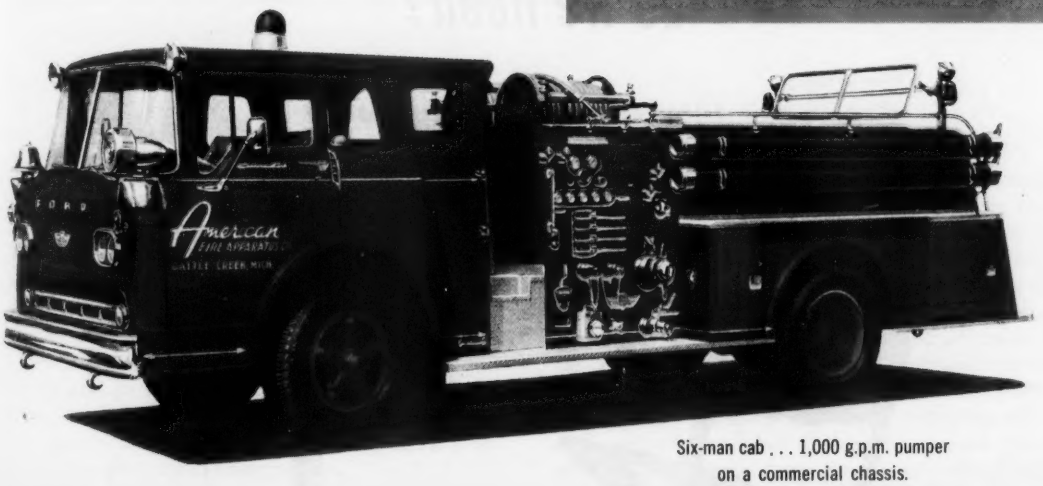
AUDIO Super HAILER® 'TP' transistor-powered PORTABLE MEGAPHONE

For full specifications, write: AUDIO EQUIPMENT CO., INC., Port Washington 38, N. Y.

(Originators of the power-megaphone. Specialists in self-powered voice systems.)

See it at the I.A.F.C. Convention
Sept. 12–15th, Rochester, N. Y.

NEW... from AMERICAN FIRE APPARATUS...



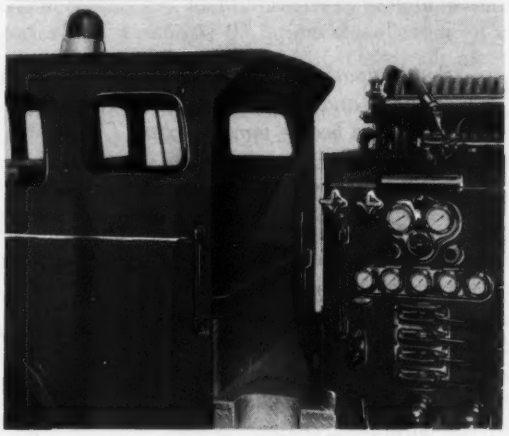
Six-man cab . . . 1,000 g.p.m. pumper
on a commercial chassis.

SIX-MAN CAB on a commercial chassis

Now, for the first time, you can get a spacious six-man cab on a commercial chassis. You get advantages never before offered, even in custom-built trucks. Here is truly fine engineering and craftsmanship, so typical of *American* Fire Apparatus. It is another example of how *American* helps make your fire-fighting job easier and increases your efficiency.

- Firemen can get out of either side of the broad rear seat — straight-through unobstructed passage from one side of the truck to the other.
- Sliding window permits easy communication between front and rear seats.
- Front and rear portions of cab are constructed as a single rugged unit.
- Rear section of cab has its own dome light.
- Side windows of safety plate glass are mounted in heavy rubber seals.
- Entire cab tilts forward, providing ready access to engine.

Wide comfortable seat, ample headroom, straight-through passage with no obstructions.



For complete details about this new six-man cab, see your nearest **American** representative.

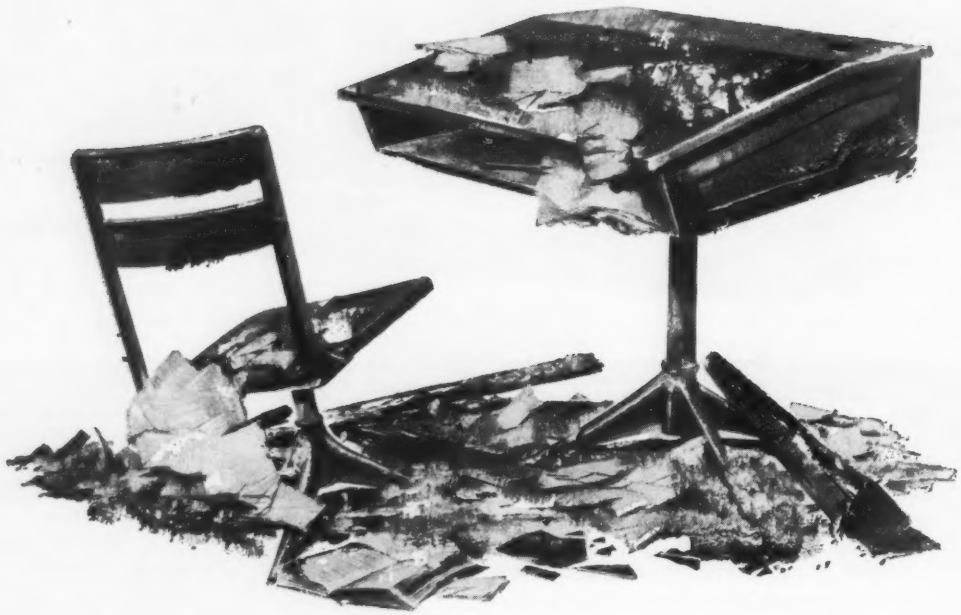
AMERICAN FIRE APPARATUS CO.

American

FIRE APPARATUS CO.

Main Office: Main Street Rd., Battle Creek, Mich. Plants at: BATTLE CREEK, MICH., MARSHALLTOWN, IA., STRATFORD, ONT.

How many lessons do we need?



Smoke floats across a schoolroom floor. A child screams, stumbles and falls into a doorway. Hysteria fills the hallways. Trampled bodies jam the exits. The fire's a roaring demon now consuming . . . consuming . . . consuming.

The story is not new. It happens in cities throughout our country . . . and each time it happens the public is shaken from its apathy. We are suddenly aware because the statistics are children now. But for how long will we be aware? The ugly truth is — an aroused citizenry is not aroused for long. And again tragedy waits for its opportunity — *our own short memories.*

How many lessons must we learn? 12,000 people died last year in fires — 2100 were children. Yes, these are "statistics". But each was a "loved one" to someone. *And the real tragedy is — all of the lives could have been saved.* Here's something you can do to prevent such needless tragedies . . .

Have your Fire Chief, or School Board Official contact a Gamewell engineer. He is a highly trained expert in fire detection who can give you information and examples of fire alarm installations. And he will survey your buildings at no obligation to you.

He is backed by the largest plant in the world engaged exclusively in the manufacture of fire and other emergency signaling systems and equipment. Have your official call the nearest Gamewell Office — we will gladly accept the charges.

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FIRST...WHEN SECONDS COUNT

FIRE
ENGINEERING
VOL. 113, NO. 8 AUGUST, 1960
THE JOURNAL OF THE FIRE PROTECTION PROFESSION SINCE 1877

The Mark of Achievement

Since 1916 the National Board of Fire Underwriters has employed what is termed the "Standard Schedule for Grading Cities and Towns" for measuring the fire protection defenses of communities of this country. The "grading schedule" as it is popularly known, is a remarkable document which has enabled insurance engineers to compare the fire protection potential of practically all municipalities on a more or less equitable basis and in so doing, determine basic or "key" insurance rates. Despite criticisms of it, the grading schedule has withstood the test of time as a solid measure of fire protection effectiveness.

From time to time, revisions of the schedule have been made to keep it abreast of our changing national conditions and general way of life. The National Board recently announced it has been conducting special studies for the past two years to determine if further changes and refinements of it are necessary at this time. The Board stated it is exploring the significance that such factors as high-value shopping centers, slum clearance projects and construction of superhighways have on over-all grading.

It is also re-examining standards of fire department manpower, equipment, operations and communications and their effect on the conflagration potential. Furthermore, it said consideration is being given to a study of the increasing exposure of some communities to catastrophe loss such as may be engendered by the increasing use of radioactive materials, transportation of explosives through congested areas and new potentially hazardous chemicals. The NBFU announced it is expected that some time would be required to properly study these and other difficult problems which concern a community's welfare. In the light of this announcement, it may be well for all fire chiefs to closely evaluate how these changes have affected individual fire department operations in order to maintain the most effective and efficient operations.

A major portion of this issue of FIRE ENGINEERING is devoted to a study of the Rochester, N. Y., Fire Bureau, host department to the forthcoming 87th Annual Conference of the International Association of Fire Chiefs. The purpose of this editorial effort is to relate to all interested fire service officials how a city reverses a trend of deterioration of its fire protection service and rebuilds it to a point of excellence. In Rochester the record shows that such an accomplishment was achieved in the short space of six years.

Late in 1949, the National Board inspected the fire defenses of Rochester. Conditions were found to be poor and the New York Fire Insurance Rating Organization advised the city that unless definite improvement was shown, the insurance classification would be dropped downward with attendant increased premium costs to the citizens of the community. The city officials immediately began exploring all means and methods available to them to prevent this downgrading, and at the same time, reap a dividend of increased fire protection if at all possible.

That such a program as eventually decided upon was effective is a matter of record. The over-all grading of the community improved greatly, enabling it to remain in the original classification it had enjoyed previous to the threatened downgrading. The future possibility of upgrading is an incentive which still remains within reach.

On the other hand, the Rochester Fire Bureau, based upon a reinspection by the National Board engineers in 1955, had improved so greatly in all categories that it entered the prime classification of cities considered to have fire departments which meet the requirements necessary for Class 1. The study in depth which follows recounts the story of the Rochester undertaking as the persons and groups involved in the reorganization see it. In addition, the day-to-day methods of administration and operation are recounted in order to show how the fire bureau intends to continue to hold its eminent position and, if possible, to improve it further.

Most of the articles touch on important points in the grading schedule and are intended to show that no "miracle" methods were employed. Rather standard principles of administration and operation already well known to the fire service were followed at all times. Most important, competent advice was first secured, a sound over-all plan devised and then followed through to a successful conclusion.

Hlow O'Brien

ROCHESTER, U. S. A.

A yardstick for improvement

By DONALD L. DRUMM

The author is an engineering graduate of Bucknell University and holds a professional engineer license in Pennsylvania. He joined the National Board in 1940 and served for approximately 10 years as a field engineer in municipal fire protection, with time out for service during World War II with the Air Force. He served as supervisory engineer from 1953 to 1959 when he was named assistant chief engineer and placed in charge of the field engineers of the New York office.

HOW CAN I improve my fire department? How can I develop a good department — a first-class department? Almost every chief should ask himself these basic questions at one time or another, and we of the National Board of Fire Underwriters are pleased that the majority have done or are doing so. However, a few have not; they, as well as their superiors in some instances, have shown little or no interest in self-improvement and do not seem to care. The National Board can be of assistance to those chiefs desiring to upgrade their departments. Although willing, we cannot help those who will not try to help themselves.

Let us consider briefly some factors, and related suggestions which, if acted upon, will result in an improved department. No doubt much of that which follows will be "old stuff" to many, but should be of value as guidance to those chiefs who are always eager to find ways to improve their department.

Every department, large and small alike, is composed of three elements —Organization, Equipment and Operations—each of which has numerous smaller, related parts.

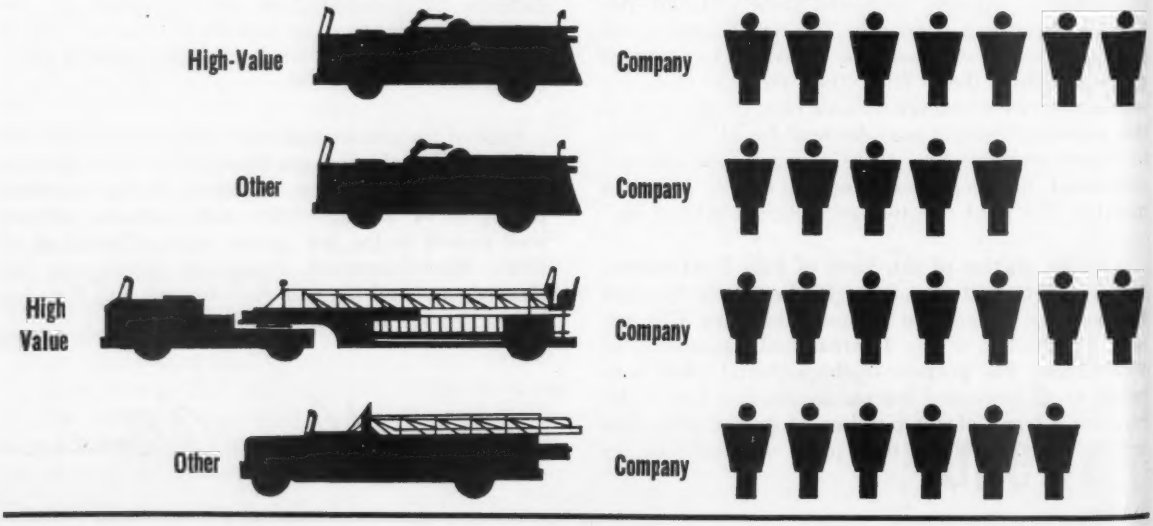
Every business or other activity must have a suitable structure to be successful, and a fire department is no exception. There must be a well-defined chain of command, even in small departments, with duties and responsibilities prescribed for each group of personnel in the chain. A simple structure will suffice for the smaller department, but the needs of the larger ones can be satisfied only by a more complex make-up.

At the top must be good leadership in the form of a chief who is experienced, progressive, enthusiastic, energetic, and fair-minded. Salesmanship is also most important, as a chief must sell his ideas, not only to subordinates but to superiors who may not be familiar with fire matters.

Sufficient assistant or deputy chiefs, as well as battalion chiefs in large departments, are needed to help carry the load of administration and supervision, so that the chief has more time for creative planning. His immediate subordinates should be experienced and, through training and assigned responsibilities, be able to carry on during his absence. Similarly, each engine and ladder company should be headed by an officer competent to supervise and lead his respective unit.

An adequate number of engine and ladder companies must be provided and so distributed as to give complete coverage to the city. Reasonable response distances are a definite requirement, with those to high-value and hazardous districts, as well as to institutions with a high life hazard, being shorter than those to the typical residential area. Special units, such as fireboat companies, are often needed for unusual conditions. Under certain

Recommended Company Manning (including an officer)



conditions and by careful planning, it may be possible to effect a reduction in the number of existing companies and still maintain a good level of protection. The National Board has been of assistance to a number of cities in this respect, one example being the City of Rochester, where the total number of companies was reduced from 35 to 30 and stations from 28 to 18. This reduction was proved to be feasible, provided a number of stations were built at new locations so chosen as to provide proper distribution. Fire stations need not be palaces, but should be of sufficient size, well maintained, clean and comfortable, all of which help to keep morale of the men high.

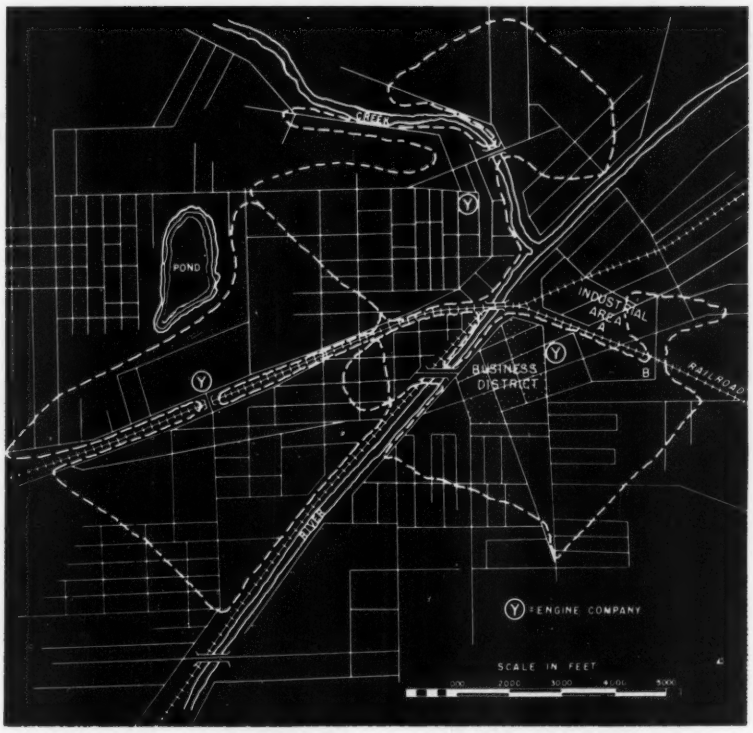
Most of a fire department annual budget, generally 85 or 90 per cent of the total, is spent for personnel to man the companies. In view of the high costs, and since today's privates will be tomorrow's officers, suitable enlistment standards, including mental, physical and medical requirements, should be maintained in order to obtain the best men possible. Promotional standards must also be adequate and there should be suitable provisions for retirement.

It is important that members have tenure of office with removal only for cause. Politics should have no part in fire department administration and when there is such interference, discipline and morale suffer. Outside influence is not only discouraging to a chief, but also to the officers and men serving under him.

It is self-evident that sufficient men should be on duty with each company at all times in order to handle efficiently the emergencies that arise; two or three men per company are too few to permit good fire fighting. Most chiefs agree that no fewer than five are necessary and that more are needed for those companies which respond to high-value and hazardous districts.

Efficient use of the men that have been provided should be obtained by: Assigning them to specific companies rather than to a station which may have two or more companies; maintaining minimum company manning by temporary tranfers between companies and platoons; and spreading the vacation period over as much of the year as possible, so that fewer men will be off duty at any one time.

Use the off-duty force when needed. Establish a definite plan for recalling these members, either to the fire if only additional manpower is required, or to form additional companies by manning reserve apparatus when the department has too few regular companies. In any event, the recall should be made before all companies are out of service, or before large sections of the city are completely stripped of protection. Remember that neighboring communities may be able to help you, and don't be embarrassed to call them. It is important, of course, that there be a definite understanding between departments, so that when aid is requested there will be no delay in receiving it.



This sketch showing a business district and industrial areas, indicates the proper method of determining company coverage. Actual running distances are measured, using the logical routes of travel. Rivers, creeks, railroads, etc., can have an adverse effect on response distances. The dashed lines outline the areas within ¾ of a mile of an engine company. Industrial Area A is beyond a ¾-mile running distance by an engine company because the closest railroad crossing is at Point B. NBFU Special Interest Bulletin No. 176 contains suggestions concerning the location of fire stations

Apparatus and equipment

A well-equipped department is a necessity if men are expected to work efficiently. Pumpers instead of hose trucks are needed in most cities and aerial ladder trucks generally should be obtained instead of service ladder trucks. In many communities, a ladder truck must be tillered so as to permit easier maneuvering along narrow streets and around corners. Apparatus built in accordance with the requirements of Pamphlet No. 19, "Suggested Specifications of the National Board of Fire Underwriters for Motor Fire Apparatus" are considered suitable.

Although briefly mentioned in the pamphlet, the purchase of a ladder truck equipped with a pump, commonly called a "quad" or a "quint" if provided with an aerial ladder, generally should be avoided, since separate apparatus will provide more flexibility and result in more efficient operations. Full grading credit cannot be given for a "quad" or a "quint" as both a pumper and a ladder truck.

When new apparatus is purchased, the best of that which is to be replaced should be kept in reserve for manning by off-duty members or for use in case first-line apparatus must be taken out of service for needed repairs. It is well for any city to adopt a regular apparatus replacement program so that all apparatus will not become overage at the same time, thus requiring a large capital outlay at one time.

Suitable heavy stream appliances, minor equipment, and hose should be so distributed among all apparatus that sufficient amounts will be at hand for immediate use at every fire. Hose should be well cared for, and tested at least annually to a minimum of 250 psi. Suggested standard equipment is listed in Pamphlet 19, but additional special tools and appliances

Continued on page 829

A YARDSTICK FOR IMPROVEMENT

Rebuilding a fire department

How the Rochester, N. Y., Fire Bureau reversed a downward trend

By KENNETH C. TOWNSON

General Townson, who recently retired as commissioner of public safety was appointed to his post on December 15, 1950. He is a Major General, United States Army, retired.

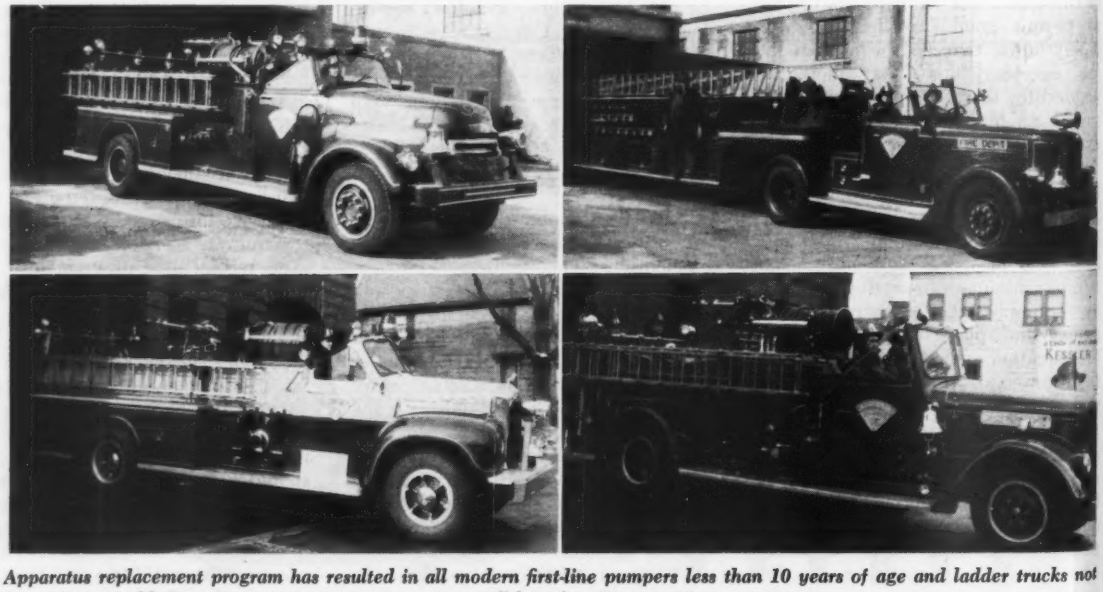
MORE ADEQUATE fire protection for Rochester, N. Y., is the result of a long-range plan inaugurated in the early 1950's, based on relocation of firehouses and the reassigning of manpower in the various locations. This plan was developed after the National Board of Fire Underwriters surveyed Rochester in 1949. The report was a cause for concern by the city officials and the fire bureau because enough deficiency points were assessed against Rochester to place it in the position of a Class 4 city. Fifteen years had elapsed since the previous survey—then Rochester had been rated as a Class 3 city.

The 1949 report listed the following deficiencies:

Fire department	541
Fire alarm	78
Fire prevention	97
Water supply	557
Police	15
Building department	50
Structural conditions	225
Climatic conditions	82
Total	1,645

Immediate steps were taken by the city manager to determine what could be done by the city to improve conditions. He met with representatives of the National Board and the New York Fire Insurance Rating Organization and discussed all phases of the report. The Rating Organization agreed to delay the mandatory rate adjustment accompanying the change from Class 3 to Class 4 with the firm promise that the City of Rochester was including improved fire protection as part of its over-all redevelopment program. The city manager also requested a detailed list of deficiencies from the Board. Study of these revealed that the Board's greatest concern was insufficient manpower and insufficient number of stations to cover the city within the required response distances.

At that time, plans were already under way for the improvement of Rochester's water supply. To augment its upland supply, a 36-mgd treatment plant was built near Lake Ontario to draw water from that source and was completed in 1954 at an approximate cost of $6,000,000. The supply mains of the upland supply from Hemlock Lake were cleaned and lined. By the end of 1955 more than 12 miles of new mains, 71 new valves and 143 new hydrants had been installed. In



Apparatus replacement program has resulted in all modern first-line pumpers less than 10 years of age and ladder trucks not over 14 years old. Complement of reserve pumpers are all less than 20 years of age at present

Climatic conditions are sometimes severe in the western New York lake area. View of winter fire fighting scene is typical

Extensive use of ladders and heavy streams on business occupancy in downtown high-value area. Construction of modern highways and traffic loops is eliminating some hazardous buildings from center of Rochester

1955 a five-year program for cleaning and lining the mains of the Holly High Pressure Water System was initiated. This project included the installation of new 16-inch main from the domestic water supply to feed the Holly pumping plant.

To consider the other deficiencies assessed against Rochester, a fire bureau recommendation committee was appointed. This committee was composed of ranking officers of each of the divisions of the fire bureau. At the same time the bureau of municipal research was studying the report. Weekly meetings were held by representatives of these groups. Their first consideration was to suggest changes in the fire bureau to reduce the deficiency points.

In order to comply with the recommendations of NBFU, it seemed that it would be necessary to build new stations to house two new pumpers and one new ladder truck at a capital expenditure of $500,000. This would also have required an increase in the yearly payroll of approximately $250,000. In order to properly man existing fire stations, 72 new firemen were needed. This would have meant another increase in the yearly payroll of $360,000.

The committee, after a detailed survey of response areas, recommended that a firehouse relocation program be started. This would eliminate five existing companies and permit meeting the manpower and response requirements without an appreciable change in the yearly payroll.

Rochester's training program received severe criticism. Facilities were such that drills were limited to the summer months and modern training practices were impossible due to limited space and the age of the building. As part of the improvement program, the city council authorized the building of a modern and complete fire training academy.

The fire academy, located on the edge of the city, where there was sufficient ground to allow most modern training methods, was completed in 1954 at the approximate cost of $1,000,000. Also housed at this facility is the engineering and repair division. Actually a new concept in fire training, it is a model which has brought visitors to Rochester from all over the United States and Canada.

Fire fighting apparatus was in bad condition and rated poorly. Some first-line pumpers were 23 years old. Our ladder trucks included some with old wooden aerials and we had three quads. A five-year replacement program for equipment was started and has been revised each year.

Today all first-line pumpers are less than 10 years old and 12 reserve pumpers are less than 20 years old. Ladder trucks are all equipped with metal aerials and no first-line truck is over 14 years old. Many types of small appliances such as breathing apparatus, hose clamps, hose jackets, acetylene torches were purchased to provide proper tools and equipment.

The working schedule of the fire bureau was revised. A three-group system was inaugurated so that floating officers were eliminated and the groups, from deputy chief to fireman, worked and trained as teams.

The fire prevention division was strengthened and more authority and responsibility delegated to the fire marshal. A new fire prevention code, patterned after the suggested code of the NBFU was adopted by the city council. A system of building inspection by company members was started and has proved of great value.

The fire alarm division was scrutinized and minor deficiencies were corrected. Fire dispatchers were trans-

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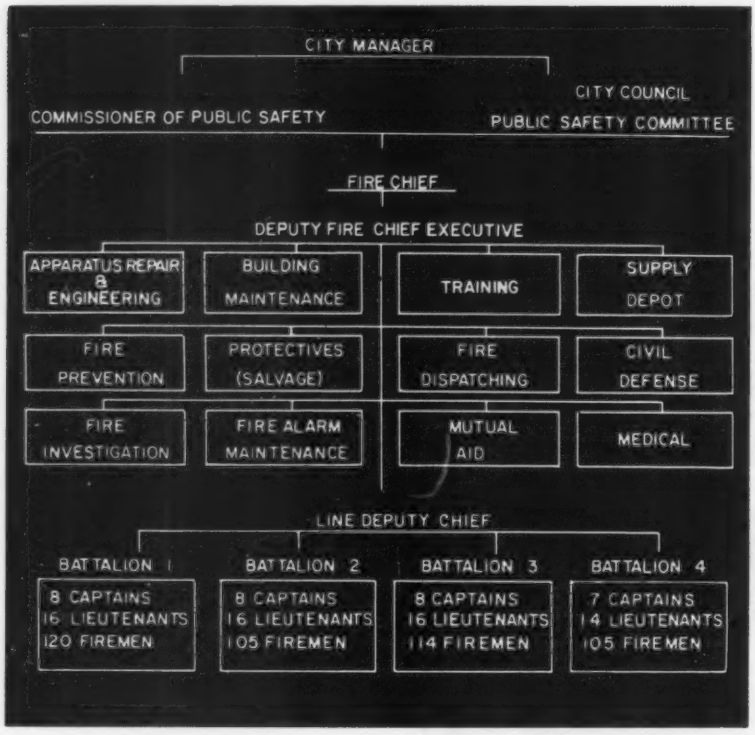


Fire Chief George L. Holzschuh was appointed to the fire bureau on February 16, 1920. He served in both engine and truck companies as a fireman and was promoted to the rank of lieutenant in April 1933, and served with Engine 16. He was named captain in October 1937, at which time he was assigned to Truck 2. He became a battalion chief in March 1943 and in May 1954, he was promoted to the rank of deputy chief. He was named chief on November 19, 1958. He is a member of the board of directors of the New York State Fire Chiefs Association and a member of the Monroe County Fire Advisory Board.

A YARDSTICK FOR IMPROVEMENT

Administrative structure of the fire bureau

By CHIEF GEORGE L. HOLZSCHUH

THE CITY OF ROCHESTER is governed by nine city councilmen who appoint a city manager as the fiscal head of the administration. The manager, in turn, appoints the commissioner of public safety, who serves at his pleasure. The commissioner is responsible for the fire bureau and in addition, the police bureau, parks and playgrounds, the building bureau, weights and measures, traffic control and the bureau of public safety radio. All members of the fire bureau including the fire chief are appointed by the commissioner of public safety.

The fire chief, administrative head of the fire bureau, is responsible for all operations including the assignment and transfer of personnel. He is assisted by an executive deputy chief, a head account clerk, an account clerk typist and a senior stenographer.

The table of organization of the bureau shows a total of 602 uniformed men and 38 civilian employees.

The fire bureau's operational budget for last year amounted to $3,492,777, including $3,282,072 for salaries. This does not include the purchase of new equipment or fire stations as these items are charged to a separate capital improvement budget.

The line division includes three deputy chiefs, 15 battalion chiefs and their drivers, together with 528 officers and men assigned to fire stations. Administratively the division is divided into three groups, each headed by a deputy chief. For operations the city is divided into four battalions, with a battalion chief on duty with each group. Three floating battalion chiefs fill in when the regularly assigned chief is off duty or on detached duty for training or inspection work.

Each fire company is commanded by a captain who also heads a group. The other two groups in each company are commanded by a lieutenant. As an administrative policy, battalion chiefs and company officers are rotated among the different groups yearly.

When more than one company is assigned to a fire station, a "station commander" is designated. Although he is responsible for maintenance of the quarters, requisitioning of supplies, watch duty assignments, etc., the station commander does not interfere with the operation of the individual companies unless discipline of more than one company would be affected.

The line division works an average of 56 hours a week. Each member works a four-day tour of duty from 8:00 a.m. until 6:00 p.m. He is then off duty until 6:00 p.m. the second day following his last tour of day duty. In turn, he works four nights from 6:00 p.m. until 8:00 a.m. and is then off duty until 8:00 a.m. on the fourth day following his last night of duty. Sleeping is permitted on night tours

and beds in quarters may be occupied between 9:00 p.m. and 7:00 a.m.

Members of the fire bureau are allowed six months sick leave with full pay. Those injured on duty are given leave at full pay until they are able to return to duty. All members off duty because of injury or illness are under the command of the department physician.

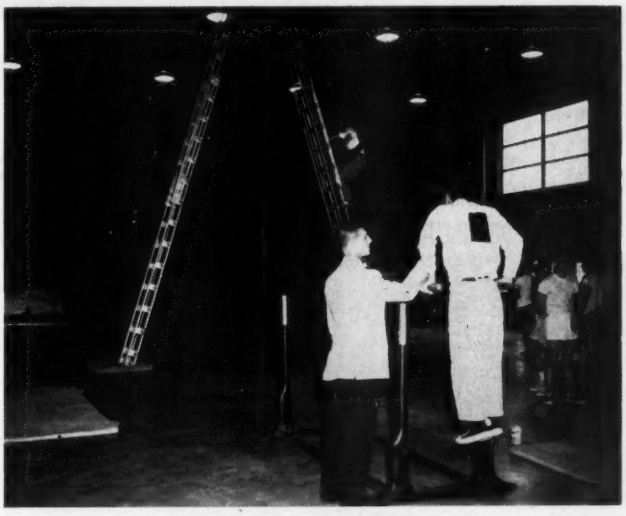
Furloughs

All men are granted 15 days of furlough after one year of service, 21 days after five years of service, 28 days after 20 years and all furloughs start on Sunday. Furloughs are picked according to seniority in grade and no member is allowed to pick more than two consecutive weeks during the summer months. Military veterans are granted leave for Memorial Day and Veterans Day.

There are two pension systems in effect in Rochester. Members appointed to the fire bureau prior to 1932 are in the city pension system and are eligible to retire at not less than one-half pay after 25 years of service and 55 years of age. Retirement is mandatory at 70. In the event of line-of-duty death, a widow receives one-half pay.

Firemen appointed after 1932 are members of the New York State Employees Retirement System. Upon joining the system, the men elect their retirement age. Benefits are based on an approximate one-quarter pay pension plus an annuity purchased by the member's contribution. Men injured in line of duty may retire on three-quarters pay. Mandatory retirement age under this system is also 70 years.

Weekly staff conferences are held in office of executive deputy chief to discuss fire fighting strategy and tactics as well as operational and administrative problems



All applicants for fire fighter position are required to pass physical agility tests in addition to examinaton to determine mental fitness

—*Gene Edwards photo*

The great majority of Rochester personnel are assigned to line companies. Modern equipment and methods are employed to facilitate fire fighting duties

The men are paid bi-weekly according to the following yearly salary schedule:

	1st Yr.	2nd Yr.	3rd Yr.	4th Yr.	5th Year
Chief	$10,362	$10,854	$11,418	$11,946	$12,540
Deputy Chief Exec.	8,578	8,970	9,432	9,864	10,362
Deputy Chief	7,776	8,172	8,568	8,970	9,432
Battalion Chief	6,750	7,086	7,410	7,776	8,172
Captain	5,862	6,126	6,420	6,750	7,086
Lieutenant	5,334	5,598	5,862	6,126	6,420
Fireman	4,602	4,836	5,068	5,334	5,598

Dress uniforms are furnished by the bureau as required. Three sets of fatigue uniforms are furnished at appointment and two additional sets are furnished yearly. Boots, rubber coat and helmet are also supplied.

Original appointments to the bureau and promotions up to and including battalion chief are made from lists furnished by the municipal civil service commission. Position on these lists is determined by written examination plus seniority and experience. Appointments to the posts of deputy chief, deputy chief executive and fire chief are made by the commissioner of public safety without examination.

A merit rating system is in effect in the bureau. Awards are made for outstanding bravery, exceptional performance of duty, conscientious service, etc., based upon recommendations from commanding officers. These recommendations are forwarded to a board composed of officers of the Na-

Continued on page 778

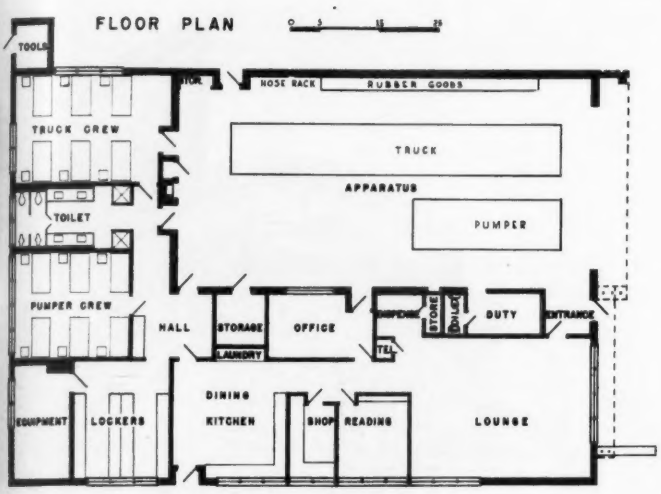
Typical fire station using standard plan is quarters of Engine 2 and Truck 6 on North Clinton Avenue

A YARDSTICK FOR IMPROVEMENT

Relocation program provides proper coverage and augments manpower

Above: Typical watch desk of old-style station. Below: Watch desk in modern station

Abandoned quarters of Engine 4 typifies type of architecture employed during horse-drawn era and in use until a few years ago



RESPONSE DISTANCE is an important factor in fire fighting strategy and proper location of fire companies is closely scrutinized by rating engineers. The 1949 grading report of the National Board of Fire Underwriters disclosed two major weaknesses of the Rochester Fire Bureau. One was the inadequate distribution of fire stations. The commissioner of public safety referred these problems to the recommendation committee of the fire bureau and the bureau of municipal research.

It was apparent that Rochester's fire stations were constructed to accommodate horse-drawn apparatus. The stables were converted for apparatus space and personnel quarters but the locations remained the same. Modern motorized apparatus had increased the range and capacity of fire fighting equipment and more manpower was certainly necessary to properly exploit the capabilities of this apparatus.

The city had expanded outward, creating large unprotected areas on the periphery. At the same time, the congested high-value areas had shifted and expanded. Street patterns had changed and many new alterations, such as the Inner and Outer Highway Loop were contemplated.

Over the years, as the Rochester fire service evolved, volunteers had been replaced with paid men. Operating costs per company had increased so that a modern, properly manned company now costs from $80,000 to $110,000 per year. The National Board recommended the building of stations to house three new pumper companies and one new truck company.

New modern fire stations housing two companies can be constructed for approximately $175,000. Such stations can be built to better serve the firemen and the modern-day equipment. It is, therefore, not economical to operate old stations which are improperly located and waste manpower and apparatus.

At the time, Rochester, in comparison with many other cities, had a high proportion of firemen. It was the fifth highest of 31 cities of comparable size which were surveyed. It was decided therefore to survey the city for proper location of fire stations.

Continued on page 827

By JOHN HURLEY

Chief Hurley was appointed to the fire bureau on February 6, 1938. Assigned to Engine 18, he was transferred to the fire college in April 1942. During World War II he served with the Army, returning to the fire bureau after his discharge in October 1944. Promoted to lieutenant in March 1945, he was assigned to the arson squad. He was made captain in February 1948 and in January 1954 was promoted to battalion chief and assigned to duty as deputy fire marshal. He was transferred to the position of officer-in-charge at the newly completed fire academy in August 1954, and promoted to deputy chief in January 1956. On May 1, 1958, he was promoted to his present position as executive deputy chief. He is presently vice chairman of the county fire advisory board.

Above: Apparatus floor and combined lounge area in old-style station. Below: Modern paneled lounge room in new station reflects trend in fire station construction

1. Supervisory enclosure. Approx. 12 foot sq. and ceiling height
2. Chief's desk
3. Chief's control panel
4. Chief dispatcher's desk
5. Assistant chief dispatcher's desk
6. Existing switchboard
7. Existing XTR console, City
8. Spare
9. Spare
10. Spare
11. Spare
12. Off duty, City
13. Gamewell fire alarm & time recorders
14. Existing Gamewell & northeast XTR controls
15. On air, City
16. On assignment, City
17. In quarters, City
18. Radio and telephone control panel, City
19. Fire apparatus locater map. Approx. 8 foot square
20. City call
21. Fill-in, County & City
22. House tokens, County & City
23. County call
24. Radio and telephone control panel, County
25. In quarters, County
26. On assignment, County
27. On air, County
28. National Civil Defense Receivers
29. Off duty, County
30. Spare
31. Spare
32. Existing Dictaphone recorders
33. Spare
34. Existing XTR console, County
35. Card index, City
36. Card index, County

Over-all dimensions of dispatcher's console
Width: 18 feet, 7 inches
Depth: 13 feet, 4 inches
Height: 5 feet, 5 inches

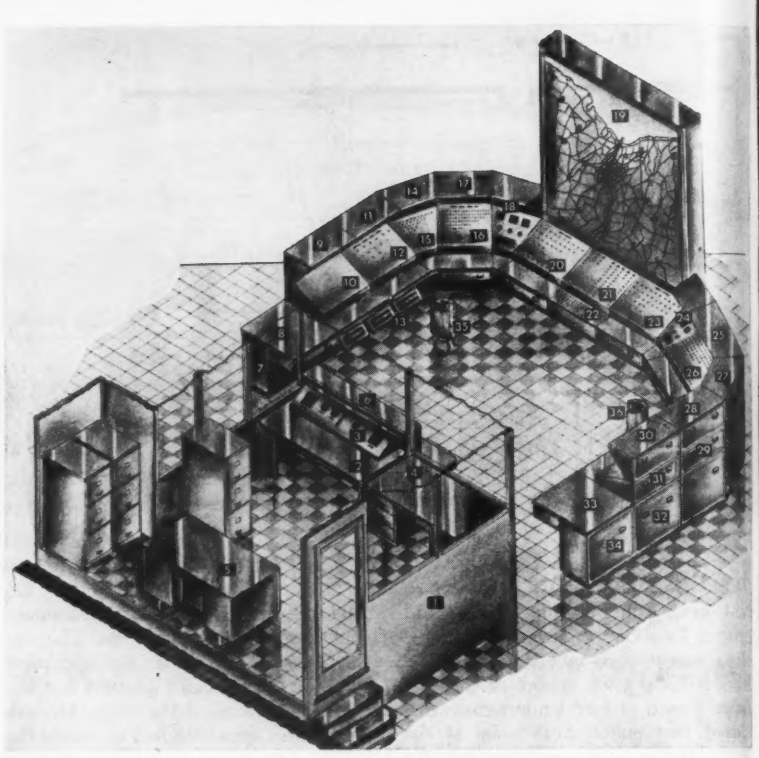


Fig. 1. Master dispatching system includes dispatchers' console, fire apparatus locater map and supervisory enclosure

A YARDSTICK FOR IMPROVEMENT

Master dispatching center to speed city-county fire calls

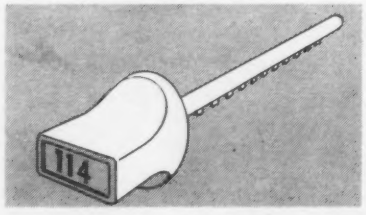
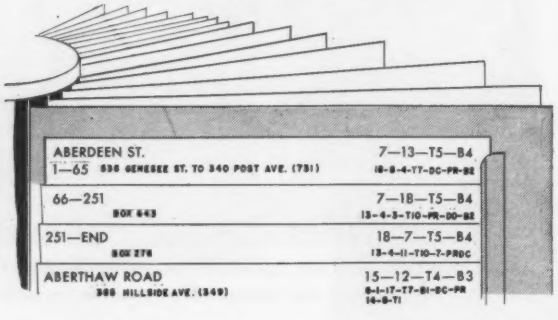


Fig. 2. Apparatus token. Number on token shows identification number of apparatus; color of knob indicates type of apparatus. Master dispatching system recognizes token identification by means of binary code established by position and number of projections on shaft

Fig. 3. Typical panel of city street indexing system. Three cards are required to show fire apparatus assignment for Aberdeen Street. Multiple assignment streets are light green cards. Aberthaw Road has only one assignment. Single assignment streets are on buff cards. Visible portion of card shows street name in large letters. Other data relates to alarm boxes, apparatus, assignments, etc.



AMONG THE LEADING exponents of fire mutual aid in the country today are the Rochester Fire Bureau and the volunteer fire companies of surrounding Monroe County. For some time now, Rochester has been rated first in its class nationally (and third, regardless of size) for over-all fire fighting effectiveness. But the Rochester Fire Bureau is not satisfied with these accomplishments. By September 1, 1960, it plans to unveil a new master dispatching system which will provide powerful new tools to improve the city-county mutual aid program, and which will further expedite the handling of city fire calls.

The fire dispatching center for Rochester and Monroe County is operated by the communications division of the Rochester Fire Bureau. The au-

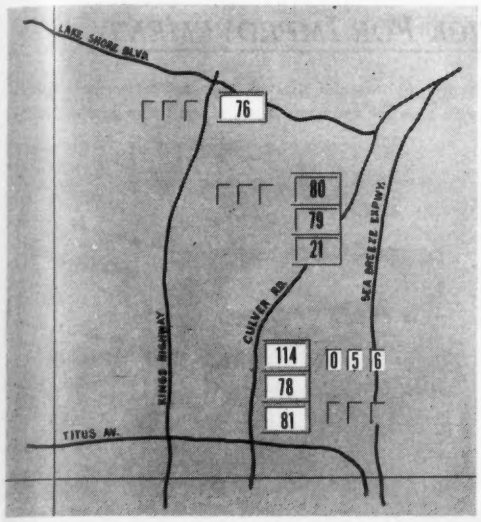
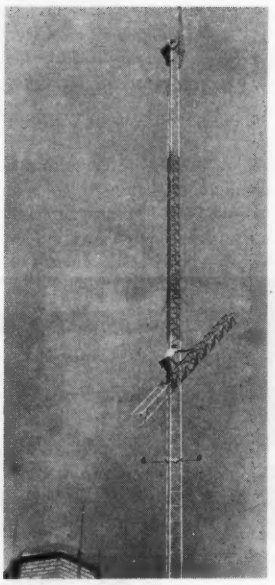


Fig. 4. (left) This portion of fire apparatus locater map shows three firehouse locations in a rural area and associated apparatus. Numbers identify apparatus and a colored insert identifies type. Lighted numbers show apparatus out of house. Number 056 on Post-Rite indicators identify fill-in equipment at this house

Right: New 250-foot radio tower under construction at fire control center



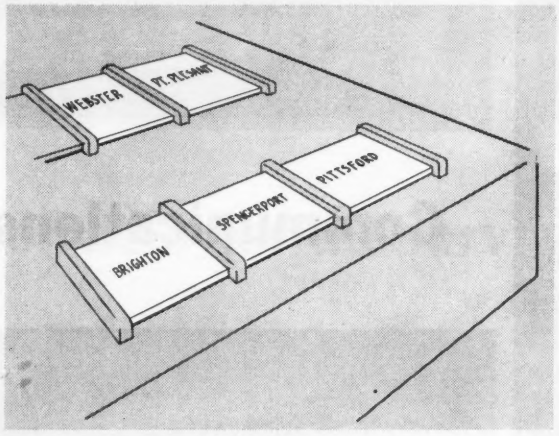


Fig. 5. Selective call buttons. Houses identified on buttons can be called by simple depression of button. All required calling codes are set up and transmitted automatically

By JOHN J. COUGHLIN

John J. Coughlin was appointed as a fire bureau dispatcher in June 1935. He was named chief dispatcher in July 1950.

thor as division supervisor, along with an assistant chief dispatcher and 10 dispatchers, controls the majority of movements of the 60 city and 188 county fire and emergency apparatus in a 673-square-mile area. The dispatching center is continuously manned by a minimum of three men: A senior dispatcher, radio dispatcher and fire dispatcher. The dispatching personnel are a highly trained and qualified group and a minimum of seven years of fire background is required for a dispatcher's position.

During 1959, this team was responsible for dispatching apparatus in response to 8,000 ambulance calls, 5,000 city fire calls and 2,000 county mutual aid calls. The last figure represented calls from both contract and noncontract fire districts.

Although mutual aid dispatching has existed for some time between the City of Rochester and the volunteer fire districts in Monroe County, it reached formal status in 1955 with the signing of the first contract between a county fire district and the City of Rochester, quickly followed by others. These contracts, which involve merely nominal charges, have been so successful that today 22 of the 43 fire districts hold contracts with the city, and at this writing several additional contracts are under consideration.

The contractual agreement provides the following services and advantages:

1. The acceptance of all emergency calls at a central location with subsequent dispatching of fire apparatus from the central point. Transmission of information to the fire district concerned, either directly or by acting as a high-power relay point for information originating in the field.

2. Sirens in the districts can be activated remotely from the dispatching center and, where desired, radio receivers can be operated in the homes of volunteers by selective call.

3. Over-all fire service is improved, as the city control center holds a listing of all streets in the district and can therefore guide volunteer apparatus more intelligently to the scene.

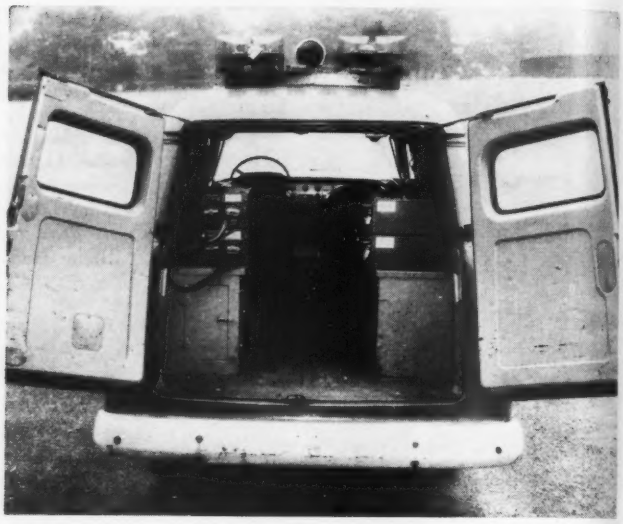
4. Communications are vastly improved as all contract fire districts follow standard regulations for radio and siren coverage.

5. At a nominal expenditure, a continuously operated dispatching center manned by trained personnel is made available to the entire fire district.

Perhaps the best way of indicating

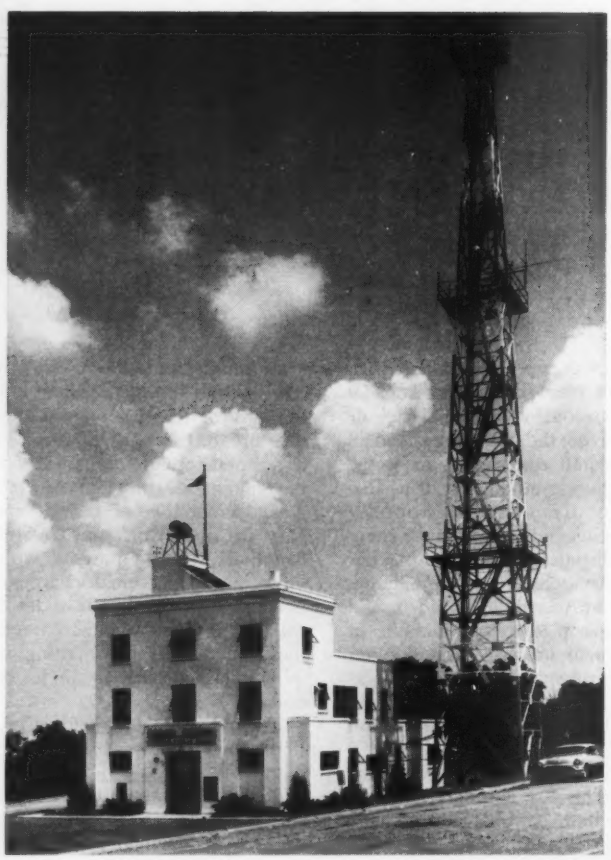
Continued on page 795

Communication truck may be employed as a public address vehicle or command center for six different radio networks



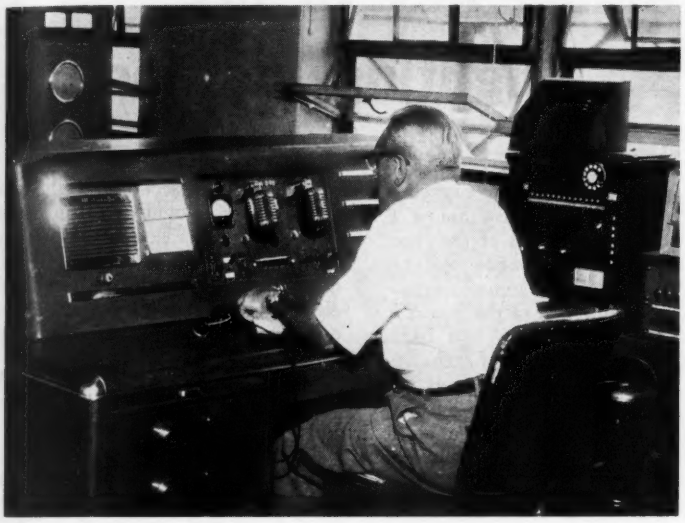
Radio technician testing transmitter chassis in well-equipped shop. Room is completely shielded from outside interference by bronze screen

Communications center



Radio center building and antennae tower atop Cobbs Hill reservoir overlooks entire city and most of Monroe County. Excellent radio coverage is provided from site —*Rochester Public information photo by Ernest Amato*

Radio division dispatchers handle intercounty fire traffic for mutual aid purposes, as well as all police traffic in towns, villages and county



By CLARENCE E. DENGLER,
Superintendent

The author, better known as "Ducky" to a host of friends in communications and fire circles, was the first licensed radio operator employed by Rochester and assisted in the installation and testing of the city's first police transmitter in 1931. In 1952 when the radio division was created as a separate unit he was appointed chief radio technician and during 1957 was named superintendent of public safety radio.

provides radio for all services

A PIONEER in the use of public safety radio, the City of Rochester and the County of Monroe have received many benefits from this service over a period of nearly 30 years. Like most cities, the first use of mobile radio communication was made by the police. In September 1930, the Rochester City Council authorized the expenditure of $18,000 for the purchase of a one-way radio system. This was to include the installation of 22 mobile receivers in police cars and a 400-watt AM transmitter at the old No. 6 precinct on Bronson Avenue.

Radio was then very different from what it is today. There were no mobile transmitters to talk back to the station, and vehicular and atmospheric noise and instability provided many problems to both operators and technicians. This radio system was ready for operation late the following spring, and on June 8, 1931, the first official messages were transmitted to city police cars in Rochester. At the outset, service was provided only during the night hours, but after operators had been trained and some of the troubles eliminated, the service was placed on a 24-hour basis in mid-July.

During these early years of public safety radio, Election Day was celebrated in Rochester during the evening hours by spectacular fires. Numerous large bonfires in the city streets were touched off by teen-agers more interested in creating exciting fires than in the candidates elected. These many fires, sometimes in vacant buildings, often overtaxed the facilities of the fire department as communication with apparatus outside of the stations was nil.

Shared police frequencies

The first trial of radio in the Rochester fire service occurred as a result of these election celebrations. A police receiver was temporarily installed in a spare hose wagon to cruise the troubled areas. Though the communication was only to the apparatus, it proved to be very valuable and this roaming hose truck answered many alarms, besides extinguishing many fires spotted while cruising the city streets.

Radio for the fire services did not develop as rapidly as deserved, and those pioneer fire departments that did use it were forced to share police frequencies and usually police radio equipment as well. Not until after World War II did the Federal Communications Commission receive enough fire service requests for frequencies to justify allocation of a very small number of channels for fire use only.

These channels were limited to use by cities having a population of over 250,000. However, the ice was broken and the FCC received so many applications from fire departments, many from smaller or less populated areas, that more consideration was given to the needs of the fire services and a reasonable number of channels in the high and very high frequency bands were assigned for the use of all fire departments without restriction as to population. At about this same time the advent of frequency modulated radio equipment brought quieter and more reliable equipment to the public safety services.

In Rochester, immediate plans were prepared to replace the old amplitude modulated two-way police radio which the fire chief, deputy chiefs and all battalion chiefs had made use of for three years.

Higher location for base station

The necessity of using very high frequencies required that a new and higher location for the base station be chosen to provide sufficient coverage. The city was very fortunate to have available an excellent location overlooking both the city and general county area. Long use and tests as a re-

Continued on page 785

A YARDSTICK FOR IMPROVEMENT

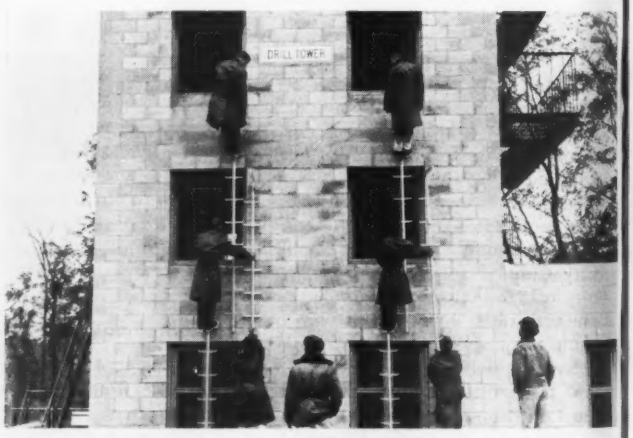
Continuous training key to fire fighting methods

ESTABLISHMENT of a modern training center and proving ground for the fire department of Rochester became a reality in 1954 with the opening of the Fire and Police Academy. This attractive, functional modernistic group of buildings is the home of the Fire Training Division and the Fire Bureau Apparatus and Enginering Division, as well as the Police Training Division. It is located on six acres of land, west of the city on the banks of the Genesee River with sufficient area for expansion. Ample classroom and office space is provided and year-round training is made possible by means of the specially designed combination auditorium and interior drill arena.

Directly to the rear of the academy buildings along the river is a large, well-equipped area devoted exclusively to fire fighting. Every effort has been exerted to make each installation in this area as functional as possible with the ability to duplicate actual conditions encountered on a fire scene.

The utilities section of the fire fighting area, provided by the Rochester Gas and Electric Corporation, is designed to acquaint firemen and utility personnel with the hazards of electrical and natural gas fires. The numerous experiments conducted on these installations by R G and E's research engineers, together with Training Division personnel has resulted in safety procedures and extinguishing methods developed under actual field conditions. An electrical transformer that can be fired remotely, a large grid suspended between two street poles that can be energized to 35,000 volts to test the conduc-

Recruit training group studies basic evolutions inside Fire Academy auditorium during inclement weather. Three pieces of apparatus can be utilized at one time



Time-tested method of building confidence through pompier ladder drill is employed during recruit training. Men are coached by instructors as they build chain up face of drill tower

Instruction in fighting a magnesium chip fire is given during night class at the training ground fire fighting area. Concrete baffle is especially constructed for the purpose

Combined Fire-Police Academy provides excellent facilities for teaching and developing fire fighting personnel

By CLIFFORD J. McMILLAN
Deputy Chief, Training Division

Chief McMillan was appointed a fire fighter in 1938. He was promoted to the rank of lieutenant in 1946 and captain in 1948. From 1952 until January 1954, he was on special assignment to the office of civil defense as coordinator for the fire, police, rescue and plant protection divisions.

In 1954 he was promoted to battalion chief and assigned to Battalion 3, line division. He was appointed director of the fire-police training academy in May 1958 and promoted to the rank of deputy chief on January 1, 1959.

tivity to ground of various fire streams, overhead wire and pole installations and underground electrical vaults are exact working replicas found in the community.

Utility installations duplicated

All natural gas installations are designed to duplicate any accidental fire encountered in the field. Broken underground piping with fire burning through the soil; broken bell and spigot joint fires; tap hole fires in distribution piping for bagging operations (a technical method of closing off a gas main by inflating bags placed in the piping); and underground regulator vaults that will explode and burn intensely, enable firemen to learn the best procedures to contain the fires and protect themselves and gas personnel while the necessary repairs are made.

The six-story cement-block training tower is equipped with wet and dry sprinkler and standpipe systems. Fires may be built on all floors and all methods of advancing lines can be employed. The tower is a must for use with portable ladder pipe drills and aerial ladder work. The large safety net at the base of the

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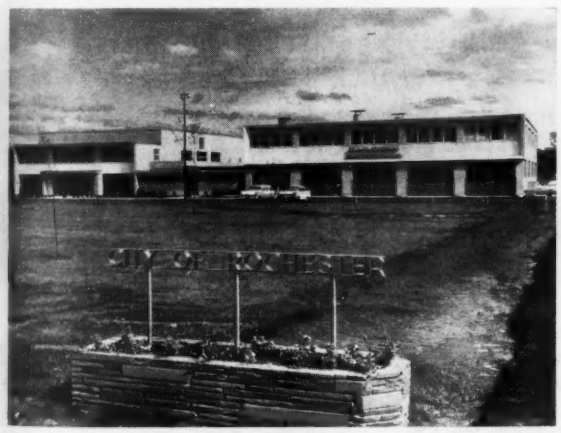
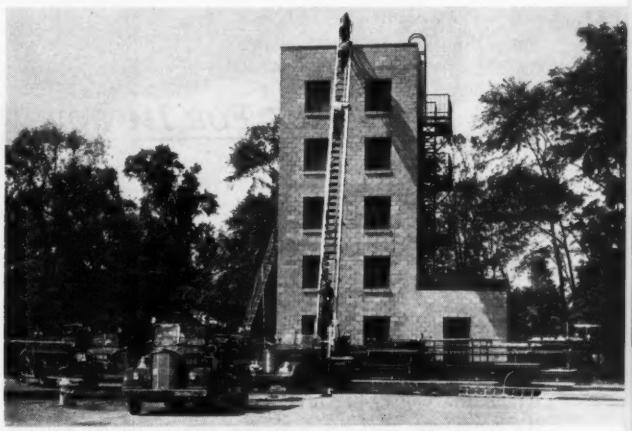


Exterior front of Fire-Police Academy. Apparatus shops occupy ground floor of section on right with offices and classrooms on second floor. Auditorium, showers and locker room are at left



Drill tower facility at training ground permits extensive ladder and hose training. A 40-hour-per-year in-service refresher training course is carried out by each company and battalion

Engine company drills in water fog method of approach for extinguishing gas regulator fire in street manhole vault. Vent stack and meter equipment are duplicates of installations in city streets

Engine company fights fire in large electric power transformer. Drill was part of demonstration for engineer members of Edison Electric Institute during conference held in September 1958

—Bausch & Lomb Optical Co. photo

Above: The author conducting a class at conference room of participating plant. Visual aids are employed with lectures whenever possible in order to increase effectiveness of presentations

Left: Student group from DuPont plant protection brigade receives instruction in use of demand breathing apparatus at fire academy drill house—Rochester Fire Academy photo

A YARDSTICK FOR IMPROVEMENT

Rochester trains industrial fire brigades

PLANT FIRE PROTECTION and fire prevention are subjects upon which the well-being of the owners, the employees and the economic stability of a community depend to a very great extent. The Rochester Fire Bureau, as a part of its official operations, maintains a program for assisting all companies in the city who desire to increase the effectiveness of fire brigade personnel. Such men can be of great assistance to the local fire department in case of necessity, providing they are well trained in the fundamentals of fire fighting and their interest is maintained over long periods of time.

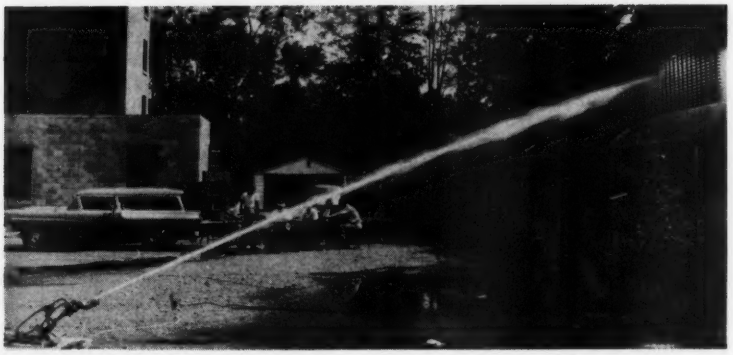
Rochester, third largest city in New York State, with a population of approximately 350,000, is known throughout the nation for the manufacture of such products as Eastman Kodak cameras and film, Bausch & Lomb optical instruments, Taylor thermometers, Stromberg - Carlson telephone and radio products, Ritter dental equipment, Gleason machines and tools, and General Railway signal systems. In addition, many other nationally known companies operate plants within the city. There are approximately 25 firms in the city employing over 1,000 people; 16 employing between 500 and 999 people; 28 employing between 200 and 499 people; 33 employing between 100 and 199 people; 62 employing between 50 and 99 people, and many more with an employment of less than 50.

The efficient and effective operation of the fire brigades in our city is due to the management of these companies. Proper fire equipment is provided and maintained, and members are constantly trained in its use. Some of the larger plants have a paid full-time fire chief or marshal who has unlimited authority to enforce all fire rules and regulations of the plant.

Monthly meetings held

In the larger organizations the brigades have regular monthly meetings, followed by a lecture on some phase of fire fighting or a drill in the use of equipment. Once a year they hold an election of officers. In most of the plants a waiting list for membership in the brigade is maintained and when a vacancy occurs in the ranks it is filled from this list. Thereafter, the applicant is investigated and examined by the company physician and voted on by members of the brigade.

Until 1957 the only training given by a member of the Rochester Fire Bureau to the existing brigades was



Research and experimental work is also carried out as part of the program. In photo, engineers of Rochester Gas and Electric Corp. measure electrical feed back to ground as straight stream is played on grid charged with 35,000 volts —*Rochester Fire Academy photo*

Class conducted in the fire fighting area at the academy. Extinguishers are the same as those at plant where students are employed —*Bausch & Lomb Optical Co. photo*

Class conducted on grounds of plant to teach handling and use of hydrant lines and to familiarize students with layout of plant grounds —*Rochester Fire Academy photo*

By CAPTAIN ERNEST STARR

Plant Protection Division

The author was appointed to the fire bureau in 1938 and detailed to the old fire college in Edgerton Park in 1941.

Prior to the opening of the new fire academy, he assisted Battalion Chief Albert E. Hoesterey (now retired) in compiling and editing the Rochester training manual.

He was promoted to lieutenant in 1954 and became captain in 1957. During that year the plant protection division was organized and he was placed in charge.

upon request. During 1957 the plant protection division was formed at the fire academy and all industrial plants and concerns employing 50 or more people were informed by letter advising them of training facilities available. These letters were followed by a personal contact with the safety director or some other authorized person of the concern. In many cases appointments were made for a survey of the plant to ascertain the type of manufacturing, materials used, and the type of fire fighting equipment available. Following this, dates were scheduled and a training program provided. As it is impossible to maintain a set program for all firms, training programs are arranged that will be applicable to their particular surroundings and production schedules.

Today, the use of the academy facilities is not confined to large groups. Any organization or group, regardless of size, receives the same consideration. Any material required for demonstrations or practice fires is supplied by the training academy and the cost of the entire program, including materials and services of the instructors, is provided by the fire bureau. All the firm has to do is to make it possible for their employees to attend the classes.

Whenever the brigades cannot attend the fire academy, and to pre-

Continued on page 762

Proper employment of water fog is taught at academy for use on oil pit fires. Actual fire fighting practice has increased confidence of men and efficiency of plant brigades

A YARDSTICK FOR IMPROVEMENT

Kodak Park—
A capable industrial fire department

By ALLEN L. COBB

Director of Industrial Safety
Kodak Park Works

The author is a past president, member of the board of directors and chairman of the Industrial Committee, NFPA. He joined the Kodak Safety Department in 1936 after serving as a Factory Mutual engineer following his graduation from MIT in 1926. He is also past general chairman, chemical section, and a member of the Industrial Conference, National Safety Council, as well as a member of the General Safety Committee, Manufacturing Chemists' Association. He is also past president of the Rochester Safety Council.

THE LARGEST industrial plant in Rochester, the Kodak Park Works of Eastman Kodak Company, with a plant population of about 20,000, is virtually an industrial community. As such, its relationship with the Rochester Fire Bureau is much the same as that of the suburban communities which are part of the mutual aid plan.

Photographic materials are naturally highly sensitive to light and to many other things so that fire fighting requirements are most unusual. In addition, it is a chemical plant with some of the special hazards of the chemical industry.

The principal dependence for fire protection at Kodak Park is, of course, on fire-resistive construction and complete coverage by automatic sprinklers and other fixed fire protection devices. Kodak Park, however, does have its own full-time fire department with two fire stations and six pieces of mobile equipment and a staff of 59 officers and men prepared to take care of first-alarm responses. Heading the department is Chief Cornelius Van Lare, assisted by Deputy Chiefs Floyd A. Grimes and Neal E. Reed.

Should the Kodak Park department require assistance from the Rochester department, plans are worked out so that the Rochester department will work in close cooperation with Kodak Park fire officers. This is exceedingly important in view of the unusual nature of the operations and the complicated layout of buildings and equipment.

The first job of the department is to supervise the nearly 2,000 sprinkler valves and to maintain close control over the use of cutting and welding equipment or other use of open flame.

Backbone of Kodak Park's fixed protection system is its water supply. The plant has its own water filtration and pumping station at Lake Ontario with a capacity of about 40 mgd. An intake pipe extends about 1 mile out into the lake which provides an inexhaustible supply. Water from this station is pumped about 6 miles through 24-inch and 30-inch mains to Kodak Park

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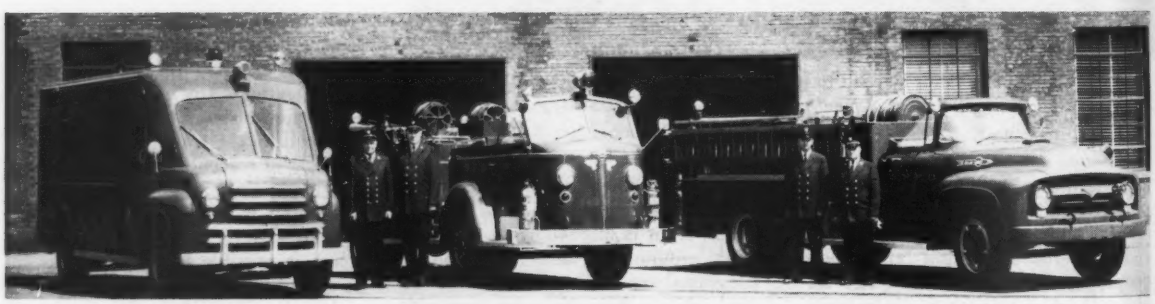


Fire headquarters is Kodak Park East station where 750-gpm pumper, 500-gpm reserve pumper and emergency service truck are maintained. Main pumper (center) is equipped with carbon dioxide for use on electrical fires

***Kodak West station houses principal 750-gpm pumper (center) which carries a large dry chemical supply for use on chemical fires. Reserve unit is a 750-gpm pumper**—Photos courtesy Eastman Kodak Co.*

A YARDSTICK FOR IMPROVEMENT

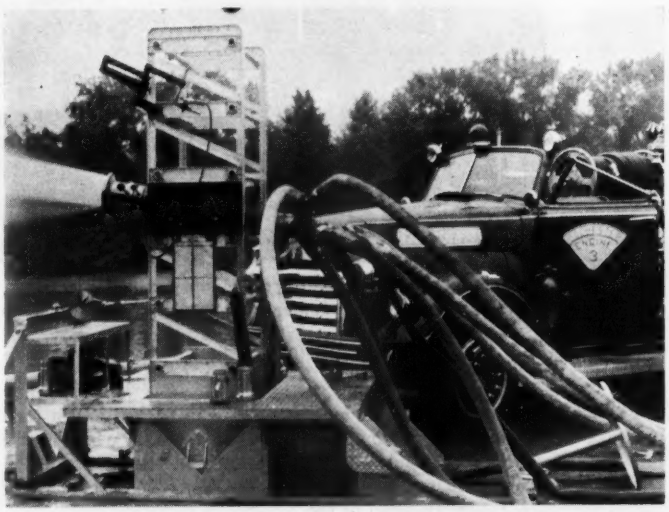
Vital program for effective apparatus maintenance

BACKBONE of any fire department is the maintenance section which keeps the apparatus "rolling" under all foreseeable and unforeseeable conditions. The importance of maintenance is recognized by all fire service authorities and in Rochester it occupies a prime position in the overall strategy of fire protection.

The apparatus and engineering division is located at the fire-police training academy, and occupies the entire ground floor of the main administration building. The large unobstructed repair shop is equipped with the very latest machinery and tools for efficient operation. Two hydraulic lifts can accommodate the heaviest of apparatus and 100-foot aerial ladder trucks can be handled with ease. Adjacent to the main shop is a modern automotive paint shop containing a very efficient ventilating system and explosion-proof lights.

The highly skilled personnel of this division are responsible for a very strict preventive maintenance schedule, general repair work and the designing and building of fire apparatus. All 76 pieces of apparatus of the fire bureau are regularly scheduled for a preventive maintenance check-up. Complete lubrication, crankcase oil change, inspection and testing are done twice yearly. All pumpers required to operate over an extended period of time are completely serviced and tested before being returned to duty. The best lubricants obtainable are used to ensure trouble-free performance, less repairs and replacement expense.

Maintenance records are kept of all repairs to apparatus. Work sheets are made out by the shop supervisor and forwarded to a maintenance clerk who posts the remarks on the card pertaining to each particular vehicle serviced. Consolidation of these records enables us to maintain a detailed account of



Special dynamometer stand designed and built in shops in use during tests to determine reaction of ladder pipe equipped with high-volume fog nozzle

Apparatus on paint line in Rochester shops. Special ventilating and lighting equipment is provided for this modern paint booth

By DEPUTY CHIEF LOUIS E. VOGT

Supervisor, Apparatus & Engineering Division

"Lou" Vogt lends a unique combination of business and fire fighting experience to the Rochester Fire Bureau. During his 16-year career as a volunteer fireman including the post of chief, West Webster, N. Y., Fire Department from 1926 to 1941, he conducted his own business manufacturing fire apparatus. He was appointed master mechanic of the fire bureau in 1941 and elevated to deputy chief in charge of the division of apparatus and engineering in 1949. He is a member of the Fire Department Equipment Committee and the Fire Hose Committee, NFPA, as well as chairman, Subcommittee on Heavy Stream devices. He has invented and developed a hydraulic controlled ladder pipe, a hydraulic controlled fog nozzle, and a pumper motor governor, vacuum shift for pumpers and lightweight hose rollers. He is also the designer of the pump test room at the fire academy.

Pumper supplies dynamometer stand during ladder pipe tests at training grounds. Excellent facilities have made Rochester a popular site for such research

repairs and service which can be readily obtained when needed.

Each year the Rochester Fire Bureau fabricates one or two pumpers and purchases one aerial ladder truck every two years. As a result of this production schedule, no first-line pumper is more than 10 years old and none of the first-line aerial ladder trucks is older than 13 years. Apparatus removed from first-line status are reconditioned and placed in "ready reserve."

Each pumper is equipped with a vacuum clutch with finger-tip control on the dashboard in the cab and a remote control on the operating panel. Divided hose beds make possible a regular or reverse hose lay of 2½-inch hose without using extra fittings. A bed for 1½-inch hose is also provided.

The latest ideas to promote safety for operating personnel are engineered into each pumper. In addition to the latest-type relief valves, a hydraulic governor designed and built in the shops is an integral part of the control panel.

When completely assembled, each pumper is subjected to rigid tests. Upon completion, the apparatus is returned to the paint shop for the finishing and final assembly. Further testing is performed before the hose, tools and accessories are added. Before a new unit is put in service, the personnel of the fire company to which the apparatus is assigned will work many hours with the training division in order to become familiar with its operation.

All plans and specifications for automotive equipment in the fire bureau are written by this division. A close liaison is maintained with the training division and the final specifications are forwarded to fire bureau heads for review and presentation to the city administration. Contracts are awarded on competitive bids by interested suppliers.

One of the unique features of the shops is the pumper test room. A wall of glass brick separates this room from the main apparatus floor. It incorporates a space 48 feet long and 19 feet wide with an opening into a 20,000-gallon pit below the grade level of the building. By use of the pit, pumpers can be tested at draft during inclement weather, and at other times when more precise recordings of performance are desired than are available at outdoor sites.

Hydraulic lifts in repair shops can handle any fire department apparatus. Four-wheel chassis aerial ladder is shown raised for ease in servicing

The pit is divided into three sections, return water passing under a first partition, into a middle pit and over the top of the second partition which is equipped with a grid, to the outside and into the drafting pit. Without this particular construction the water would possibly become hot, and all the entrained air would not be removed, thus causing the pump to overheat. A panelboard with gages and other instruments is located on the wall, and a reading of the nozzle pressure, the rpm, temperature, etc., can be observed at a glance.

During the winter months when it is impossible to conduct classes in pump operations, hose layouts, etc., out of doors, the test room is used for purposes of instruction. The room contains a hydrant with 4½-inch and 2½-inch outlets and a static pressure of 35 pounds, which is used for hydrant practice.

Research work

A large part of the energies of the apparatus and engineering division are devoted to experimentation and research work. Much of this work is done in cooperation with the National Fire Protection Association, the National Board of Fire Underwriters and leading manufacturers in the country. A recent example would be the study of the capacities of heavy stream nozzles. In order to accomplish this, a complete test stand was designed and built.

Mechanics of the study involved the mounting of the stream appliance (nozzle, barrel and fittings) on a section of metal ladder so pivoted at the bottom that the stream and nozzle back pressures could be recorded on a dynamometer, while pressures both at the nozzle tip and at the intake of the barrel could be read from gages on the framework.

By this means it was possible to secure fairly accurate comparative fig-

Continued on page 823

By BATTALION CHIEF HENRY E. MANZLER

Deputy Fire Marshal

The author was appointed to the Fire Bureau in 1928 and promoted to lieutenant in 1940. He became a captain in 1946 and was named battalion chief in 1954. In 1957 he was assigned to the fire prevention division as deputy fire marshal.

A YARDSTICK FOR IMPROVEMENT

Emphasis on department-wide fire prevention

Battalion chief and company officer inspecting school classroom exit door which had been added upon fire bureau recommendations

Apparatus field inspection employing radio contact with dispatcher is standard practice of fire bureau. Line company operation is coordinated with fire prevention division as a department policy

FIRE PREVENTION activities in Rochester were recorded well over 100 years ago. Eight years before Rochester was incorporated as a city, the second village charter of 1826 contained safety regulations giving fire wardens jurisdiction over fireplaces, chimneys and ash bins. The purpose of this was precautionary in nature and so may rightly be classed as the first official steps taken in the municipality's fire prevention program.

In 1862, the city council created the post of fire marshal with the responsibility for inspection of new buildings for fire safety features as well as from other constructional viewpoints. The bureau grew rapidly but more along engineering lines and the position of fire marshal was relegated to a lesser post without much emphasis on fire prevention in existing buildings.

Rochester's present fire prevention division was inaugurated as a unit of the fire department in the spring of 1929 under the direction of a battalion chief, assisted by one captain, one lieutenant and several inspectors. There was no fire prevention code at the time and the division was far from being truly efficient and effective. However, much was accomplished and results showed that the proverbial "ounce of prevention was worth a pound of cure."

The division staff was enlarged and placed under the direction of a deputy chief on August 24, 1944, at which time numerous buildings were assigned to line inspections and public assembly details revised. All churches and schools were assigned to line companies for monthly inspection. Line battalion chiefs were assigned large buildings in their districts for semi-annual inspection and convalescent homes for monthly review.

The division was reorganized in January 1954, and the commanding officer was designated as fire marshal with that title being eliminated from use by the bureau of buildings. Again the staff and office facilities were increased and work was started on a municipal fire prevention code. This became effective June 1, 1955, giving authority for inspection, the issuance of orders to correct violations in certain cases, and establishing penalties for failure to comply. A test of time disclosed it inadequate and a new code is now in the final drafting stages.

The present organization consists of the fire marshal who has the rank of deputy chief and who has over-all supervision of all members and activities. He works in close cooperation with the line division directly under the chief of the department and the executive deputy chief as well as the commissioner of public safety. He is

Arson section questioning suspects following suspicious fire. Team also investigates all fires where origin is difficult to determine

Head of the division is Deputy Chief Earl J. Webber who is fire marshal

Fire drill is observed by members of first-due fire company. All churches and schools are inspected by line fire fighters

also the liaison officer between the fire prevention division and other official agencies and maintains close contact through his membership on the Central Index Committee which consists of representatives from all city bureaus including police, fire, law, health and others concerned with public safety. Next in command is the deputy fire marshal with the rank of battalion chief who actively supervises the operations of the office and regular inspectors, the handling of complaints and referrals and issuance of permits.

A fire investigation, or arson, team investigates fires or alarms of suspicious or hard-to-determine origin and is composed of a battalion chief representing the fire bureau and a detective lieutenant representing the police bureau, assisted by a private from the fire prevention division. These men respond to all extra alarms of fire and are on call at other times for any investigating purpose. It is their responsibility to make arrests and follow up with court action if necessary.

There are two captains attached to the division. One maintains the administrative records of members and activities comparable to those kept by fire companies. He also presents fire prevention demonstrations to the public frequently in connection with "The House of Hazards." This device is a doll-like house equipped with miniature furniture and equipment fitted with electrical heating elements. When the proper switch is turned on, a fire is started in such places as the television, flat iron, soldering iron, furnace or fireplace, visually showing how fire starts and spreads. Fire can also be started in like manner in such areas as beds, closets, wastebaskets and electric panelboard.

The other captain is in charge of the public assembly detail and has five assistants who are on duty at all indoor public performances. The main duties of this section are to prevent overcrowding, prohibit smoking in unauthorized places and to see that aisles and exits are kept clear, as well as to assist in an emergency if necessary. When additional manpower is needed for fire safety at such public places, it is supplied by the line division upon request.

Four lieutenants are assigned to various duties in connection with fire prevention. One is assigned to the Municipal Rehabilitation Commission and is specifically concerned with fire safety aspects of residences. The latter team, comprised also of building and health inspectors is functioning with the purpose of improving such residences.

Another lieutenant is assigned to special duty with the board of education as fire safety officer, advisor and instructor. His field of operations cover parochial and private schools as well as public schools.

The other lieutenants are assigned to regular inspections when not engaged in some special duty such as instructing line company officers in fire prevention inspection at the training academy. They also assist in presenting talks on fire prevention to private groups upon request.

All places of business regardless of size, and residences coming under the State of New York Multiple Residence Law, are inspected regularly by fire companies under the direction of the battalion chief of their own district. The line companies report all hazards found to the fire prevention division for follow-up action. At the same time they familiarize themselves with the premises so that in the event of fire or other emergency they can better cope with the situation.

All complaints from citizens, referrals from other bureaus or reports from any source concerning violations of fire safety practices or conditions, whether incorporated in the fire prevention code or not, are investigated by the privates of the division. There are seven such members, one of whom works closely with the inspector from the bureau of buildings and particularly is concerned with places of public assembly such as theatres and halls, and buildings housing transitory guests such as hospitals, convalescent homes, hotels, etc.

Corrective orders are written to the person responsible for the condition.

Continued on page 791

Supply and hose depot: quartermaster for the fire bureau

Little-known division provides important functions for maintaining efficient operations

By CAPTAIN EDWARD J. KLEIN

The author was appointed to the fire bureau in 1942 and promoted to lieutenant in 1954. In 1959 he was named captain and placed in charge of the supply depot.

QUARTERMASTER of the Rochester Fire Bureau is the supply and hose depot located at fire headquarters. Commanding officer is a fire captain who is assisted by one lieutenant and seven firemen. Three of these men work the same tours as the line division, while all other members work nine hours per day Monday through Friday.

The primary responsibility of this division is the cleaning, drying, testing and disbursement of fire hose.

Rochester employs double-jacketed cotton hose purchased to its own specifications except for the 1-inch size, a high-pressure booster hose tested to 800 psi. In addition to the sizes listed in the table, each pumper carries two 10-foot lengths of 4½-inch hard suction and one 10-foot length of 4½-inch soft suction. Rocker lug couplings of the drop-forged type are employed with National Standard thread on all hose except 2½-inch. All 2½-inch couplings are cut to Rochester Standard which is 3-1/32 inches O.D. male by 7 threads per inch.

The fire bureau has been evaluating the advantages of 100 per cent Dacron hose for the past few years. Presently in use is 2,000 feet of 2½-inch and 600 feet of 1½-inch rubber-lined, double-jacketed hose of this type. The fire bureau has also replaced all cotton hose on aerial ladders with single-jacketed 100 per cent Dacron in 80-foot lengths with lightweight 3-inch couplings.

All hose is washed and dried at the hose depot. If a fire company uses less than 10 lengths at a fire, it replaces the hose from the reserve storage at its quarters. The wet hose is then picked up by the depot truck and washed, dried and returned to the proper station. When a company uses more than 10 lengths, it brings the hose to the depot following the fire where it is replaced with dry hose. Occasionally hose is taken directly to the hose depot from the scene of a large fire by depot personnel. The machines used for washing and cleaning the hose were developed by members of the depot.

Hose is dried in a 75-foot tower with a capacity for 24,000 feet. In an extreme emergency the tower can be rigged to accommodate 42,000 feet at one time and heating fans expedite the drying. When hose is in the depot for routine servicing, all couplings are inspected, repaired and replaced when necessary. All hose is tested semi-annually to 300 psi and defective hose is rarely found since none is kept in service over seven years.

A permanent inventory is maintained and when hose is over age it is turned over to other city bureaus for use. Such departments as the parks and playgrounds, sewer maintenance, ramp garages, etc., have a constant demand for this older hose. If, as seldom happens, the supply exceeds the demand, the discarded hose is sold to contractors for use on building projects.

Mask maintenance

All fire bureau apparatus carry self-contained breathing apparatus. Repair and maintenance of these masks, including recharging of cylinders is done at the hose depot. A three-stage series type, 3,500-pound capacity, air compressor, powered by a 10-hp electric motor is used for this purpose. Air is compressed to 2,400 psi, pumped into a water-cooled heat exchanger (or after cooler), and passed through a filter to remove moisture or any traces of oil. It is then channeled into a bank of twelve 244-cubic-foot cylinders.

From this reservoir the mask cylinders are charged to 1,980 psi and the cylinders are kept cool by a water spray while being filled. Aqua lungs for state and county police, as well as tanks for private industry are filled at the hose depot in an emergency. All cylinders are sent to the city chemist at regular intervals for determination of purity of contents and in addition,

Continued on page 825

Hose Inventory—Rochester Fire Department

Size	On Apparatus	In Reserve	Total
1-inch	10,460 feet	1,000 feet	11,460 feet
1½-inch	13,600 feet	9,300 feet	22,900 feet
2½-inch	35,500 feet	22,000 feet	57,500 feet
3-inch	1,175 feet	775 feet	1,950 feet

A YARDSTICK FOR IMPROVEMENT

The Protectives— a volunteer salvage company

By LIEUTENANT CHARLES H. BUBEL

The author joined the Protectives in 1946 and was elected lieutenant in 1958. During 1958, he was appointed to the bureau of fire, as a civilian employee in the office of the fire chief.

AN UNUSUAL CHARACTERISTIC of the Rochester Fire Bureau is the fact that one of its important companies is a volunteer organization. The "Protectives" as it is known was born on August 24, 1858, when a group of 51 businessmen met in the mayor's office and formed an organization known as the Property Protection Brigade. This organization shortly thereafter became the Protectives and as outlined in its articles of constitution and by-laws, was formed for the purpose of protecting property at fires and in buildings in proximity to such fires.

Operating as the salvage division of the Rochester Fire Bureau, it is a company maintained by volunteers and dedicated to a single purpose. Their main concern is with the protection of property from loss due to water, smoke and fire. The membership is composed of men from all walks of life, some 150 strong. They generously serve this community without pay with the motto "We strive to save."

Although a volunteer organization, it differs from other volunteer fire companies in Monroe County in that the members work side by side with professional city firemen. While at the scenes of emergency of every nature, the members perform as directed by the chief of the bureau of fire.

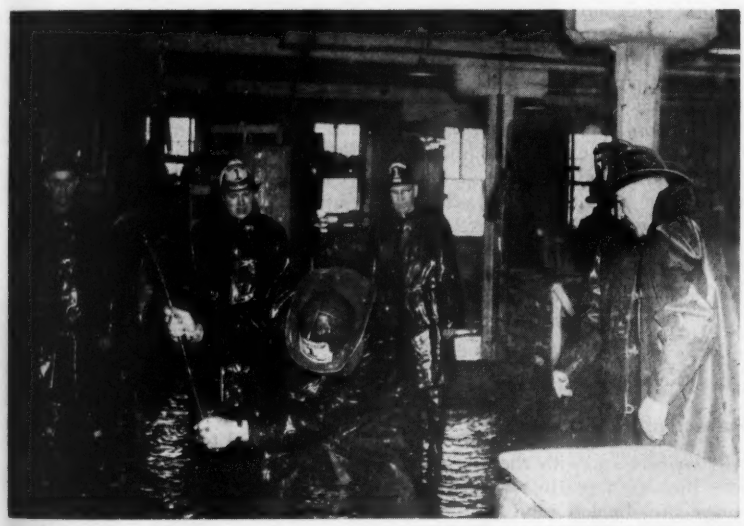
Own administrative heads

The Protectives maintain their own administrative heads. This includes the civil offices of president, vice president, secretary and board of directors, as well as active or line officers. The line includes a captain and three lieutenants elected by the company membership each year.

The duties performed by the captain are many. He is responsible for the operation of the line or active part of the organization, namely, seeing that each man and all equipment is in readiness and that all men comply with the rules and regulations of the Rochester Bureau of Fire. He is assisted in this task by the lieutenants.

Protectives employ several sizes of electric generators to provide lighting as well as service power tools

Present apparatus of Protectives was placed in service in August 1950. It replaced one that was demolished by falling walls at a multiple-alarm fire



Volunteer salvagemen opening up to drain heavy volume of water from fire building. Procedures employed are standard with most similar organizations

The company is sustained by a sum of $5,000 a year from the City of Rochester under contract for services. In addition, the city furnishes quarters, a fully equipped apparatus and three paid drivers. To help defray expenses, each member is also assessed yearly dues.

The salvage apparatus, constructed at the fire bureau shops, includes many modern components for efficient salvage operation. The body is divided into 14 compartments, each containing necessary salvage equipment. A maximum of 32 tarpaulins is carried on the apparatus at all times in two centrally located compartments. Each chemically treated duck cover is 12 feet by 18 feet in size, and weighs approximately 30 pounds. The apparatus also carries such items as a 5,000-watt portable generator, a 2,500-watt portable generator and a 2,500-watt high-cycle portable generator for operating specialized tools such as a pavement breaker and power saw. There are fourteen 500-watt portable lights with 1,000 feet of cord, and assorted small sections of light cord and junction boxes. In addition, a portable hydraulic rescue kit, three water chutes, three smoke ejectors, two portable pumps, brooms, squeegees, shovels and assorted pails are carried.

In order to fully utilize the equipment, an in-service training program is held monthly at company quarters, under the direction of the line officers. In conjunction with this, regular training sessions are held at the Rochester Fire Academy under direction of the training staff.

As stated previously, the primary function of this company is to prevent damage due to water by utilizing tarpaulins at fires. It is sometimes impossible for members to "cover" a building due to heavy involvement by fire. At these times, the company members assist where possible with laying hose lines, and also set up lights to illuminate the fire ground during fires at night. Smoke ejectors are employed whenever a heavily charged building is encountered.

After a fire has been extinguished, the members then go to work with squeegees, brooms, shovels and mops and remove excess water from the building exactly as other salvage companies operate. In cases where a cellar drain is plugged, the portable "cellar" pumps may be placed in operation.

In addition to working at fires, the Protectives are called to such emergencies as railroad and auto accidents, where people may be trapped. The company also responds to calls from the police, usually to assist in drowning operations at night by setting up floodlights.

Respond to all multiple alarms

The Protectives normally respond to all first-alarm assignments in the high-value district. They respond immediately to all multiple alarms, and on special calls from a deputy or battalion chief. Each member of the company serves a minimum of two nights per week for a period of five years. During the evening hours, in addition to a lieutenant and driver, there are approximately five men on duty. During the daytime, two or three members are on duty in quarters, and most members have a radio receiver in their homes and respond to all fires upon receipt of an alarm.

The Protectives' reward is the satisfaction gained by their efforts and the privilege of working side by side with the high caliber of men that make up the Rochester Fire Bureau, of which this city is justly proud. □□

A YARDSTICK FOR IMPROVEMENT

Mutual aid for Monroe County

Rochester pioneered smoothly working system to benefit of city and county

By EDWARD McKINNEY

The author has been a member of the Monroe County Fire Advisory Board for the past six years and is serving his second term as chairman. He is also chairman of the fire training subcommittee of the advisory board. He has been a member of the Spencerport Fire Department for 21 years and is a past president and director of the Monroe County Firemen's Association.

ONE OF THE IMPORTANT phases of the fire service in Monroe County is the mutual aid system. This plan has been in effect since 1942, and was pioneered by Rochester during the early stages of World War II in order to provide better protection throughout the county for any emergencies that might occur. It has been most effective through the years, and by means of coordinated effort has developed into a smooth operating function of the fire service.

Mutual assistance agreements between the City of Rochester and the 43 fire districts of the county make it possible for the plan to function. Also, by resolution of the board of supervisors, a fire advisory board is appointed each year. This board, consisting of 21 active members, assists the county fire coordinator in the discharge of his duties and advises the board of supervisors on matters pertaining to the fire service generally.

Personnel from the county's volunteer service and the City of Rochester's Fire Bureau, as well as mayors and supervisors from the political subdivisions, are appointed to the board in the interest of promoting greater fire efficiency and governmental cooperation throughout the county. Within the structure of the fire advisory board, communications, training and public relations are key items considered in order to make the mutual aid plan more integrated and effective.

The administration of the mutual aid system is under the jurisdiction of the fire coordinator, his deputies and the district coordinators. The function of these officers is to supervise and coordinate the activities of the fire departments in order to increase the efficiency of mutual aid. Also, it is their responsibility to establish a command post of operations during a mutual aid call and assist the chief of the department requesting aid, wherever possible.

Five mutual aid districts

In conjunction with the Rochester Fire Bureau, the 19 towns in the county are divided into five mutual aid battalions, or districts. Each battalion has its own district coordinator who supervises mutual aid activities for the fire departments in the battalion. The Rochester Fire Bureau, through the medium of its extensive training program, integrates operational fire requirements for mutual aid which will be adaptable to any of the towns in Monroe County.

Perhaps the one thing which has contributed most in recent years to the success of the mutual aid system in Monroe County is communications. Two-way communications in the Rochester Fire Bureau have been in existence for many years. However, in the case of the county volunteer fire departments, installation of communications was not conceived until around 1948. This became a reality in 1950 following a large paper storage fire at the Eastman Kodak Company's Kodak Park Works. This fire was fought for many hours and fire companies from the City of Rochester and the towns worked side by side with the Kodak Park Fire Department in extinguishing the blaze.

In appreciation of these efforts, the Eastman Kodak Company made a sizeable grant of funds to the fire service, which was utilized for installing a mobile radio in each department in the county. Each fire company then instituted a program of installing additional truck units and a base station in its firehouse to make a complete communications setup.

Many obstacles had to be overcome, such as training operators, establishing standard operating procedures, etc., but through the combined efforts of volunteers, district officers and the City of Rochester, these have been accomplished so that communications have become a working instrument of the mutual aid system. Where once it was necessary to call by telephone for assistance from other fire companies, it is now possible to request assistance within a matter of seconds, by means of radio, specifying the type of equipment needed and specific instructions as to locations, type of assistance required, etc.

Central dispatching center

The key to the success of communications in the Monroe County Mutual Aid System is the centrally located dispatching center at fire alarm headquarters. There, complete inventories of all equipment in each of the departments is available as well as street listings for each fire district. A chief or officer in charge of a fire can request assistance through the city fire dispatcher and receive as many varied units as is necessary, either directly at the scene of the fire or as a stand-by unit in a firehouse. A running log is maintained by the dispatcher so that complete control is maintained of all equipment both in and out of service.

Some of the modern apparatus available under county mutual aid plan. Each vehicle is identified by single number corresponding to county radio identifier

Ambrose Foos, who retired from the Rochester Fire Bureau as deputy chief in 1956 after 42 years of service, is coordinator and director of the Monroe County Fire Bureau

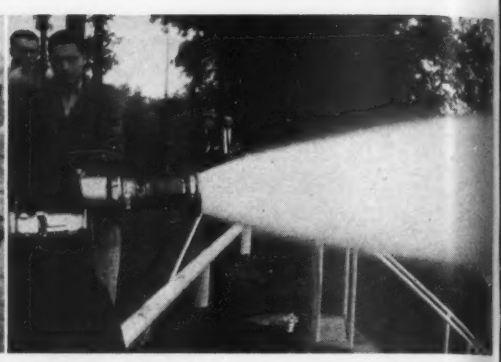
New electronic control equipment is currently being installed which will be another great stride for mutual aid in Monroe County. This will enable the dispatchers to have visual control of all equipment in the county as well as provide even greater alerting service. This forward step has been made possible through combined efforts of the City of Rochester and the county board of supervisors.

Another key to successful operation of the mutual aid system is training. Each fire department conducts training as part of its curriculum in order to keep pace with new types of equipment, conditions, and techniques. Also, training is conducted at each battalion level to familiarize the departments with conditions and equipment in other communities. Planned drills are held frequently whereby the responding units perform fire duty under the mutual aid system. At these drills pumper relays and all other forms of fire fighting techniques are applied to further the training of all personnel. The success of this training is also assisted by means of group discussions or critiques held after each drill so that weak spots or errors can be corrected.

The City of Rochester's fire academy is utilized by the volunteer de-

Continued on page 808

Subcommittee chairman, Chief Vogt looks on as Taylor engineer, Ray Owen, checks recorder on test stand



Elkhart JK-2500 discharging 2,050 gpm at 30 degrees. High-volume nozzle exceeded range of equipment

A YARDSTICK FOR IMPROVEMENT

Research determines performance of high-volume fog nozzles

By DONALD M. O'BRIEN

MODERN FACILITIES plus a cooperative administration and topnotch technical personnel has resulted in Rochester being the scene of several fire service research projects in the past few years. Most recent were the large-capacity fog nozzle tests held in September of 1959 by the Subcommittee on Heavy Stream Devices, Committee on Fire Department Equipment, NFPA and I.A.F.C.

The purpose of the tests was to evaluate in a standard manner the performance of the various large-volume fog nozzles which have appeared on the market in the past few years. The information derived could then be promulgated to the fire service in order that fire chiefs would have accurate data upon which to base fire fighting operations involving the equipment. The information reported will also be of great assistance to pump operators who must supply the lines employing these nozzles.

Measuring the flow in large-capacity fog nozzles at the various pressures and settings was a difficult problem until recently. Deputy Chief Louis Vogt of Rochester worked with the Taylor Instrument Co. of that city to develop differential pressure rate of flow meters which greatly simplified the test procedures. These instruments were employed by the subcommittee during the tests and proved very satisfactory for the purpose.

According to Taylor engineers, the differential flow meters have an accuracy of approximately ±2 per cent,

TEST RESULTS

Nozzle designation	*Gpm flows at Manufacturers settings*				
	straight stream	*Narrow or 30°*	*Medium or 60°*	*Wide or 90°*	*maximum angle*
Akron Fog Hog No. 1245	300–367	440	480	580	——
Akron Imperial 500, No. 1145	525	525	(525)	525	525
Akron Fog Hog No. 1245X	418–538	660	690	760	1010
Akron Imperial 1000, No. 1147	915	920	(920)	930	930
Akron Fog Hog No. 1247	577	800	850	900	1070
Akron Fog Hog No. 1247X	350–550	930	1000	1070	1230
Elkhart J-200	357–380	462	505	580	——
Elkhart JN-200	660	850	960	1180	——
Elkhart JK-2500	1850	(2050)	(2170)	(2330)	2760
Powhatan No. 261-D	117–140	185	(195)	242	——
Rockwood Type B (500 gpm)	——	——	——	——	510
Rockwood Type C (1000 gpm)	——	——	——	——	970
Rockwood (1500 gpm)	——	——	——	——	1440
Santa Rosa No. A-5	295	(295)	(303)	(342)	402
Santa Rosa No. A-6	860	(890)	(930)	(1010)	1200
Wooster "500"	330	390	432	515	——
Wooster V-8	490	690	740	860	——

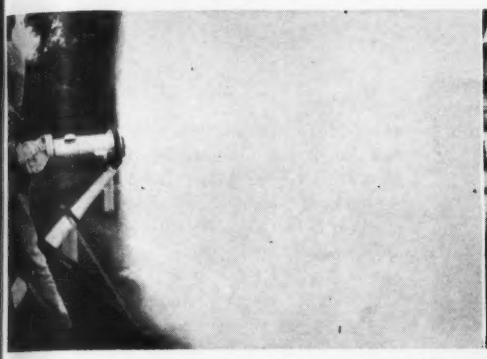
Note 1:—Where no maximum angle reading is given it indicates wide or 90 degree pattern is maximum.

Note 2:—Where no settings were provided by manufacturer figures in brackets indicate committee settings.

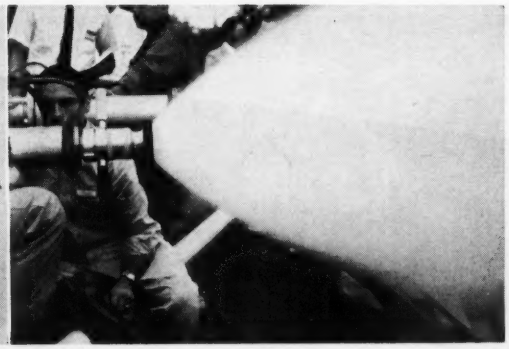
Note 3:—In case where flows exceed 2000 gpm results were calculated on the basis of flows at highest pressures which could be accurately measured.

Note 4:—Variations in straight stream flows in some nozzles are due to difficulty in determining "best" stream. Reading were taken at several settings to provide range of discharge possible.

Note 5:—Powhatan did not make heavy stream nozzles at time of test but supplied largest hand line nozzle offered by the company.



Santa Rosa A-6 nozzle set at maximum angle. Water curtain effect estimated to be nearly 180 degrees



Wooster "500" nozzle at 90-degree pattern set by committee. Measurement of photo angle was 80 degrees

well within accepted fire service requirements. This was verified by the committee by testing straight stream nozzle tips. The results agreed closely with published fire stream tables for such tips.

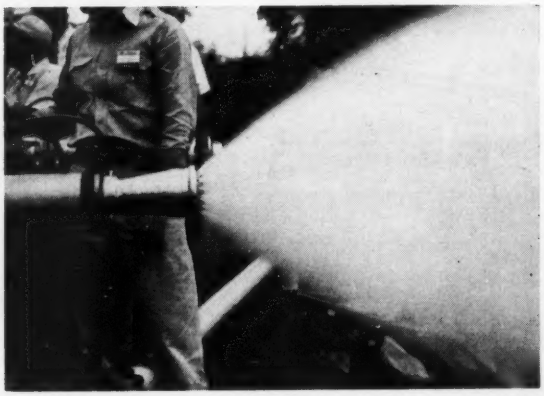
The subcommittee tested 17 different commercially available nozzles which were rated at 500 gpm or over with one exception. All were tested at 100-psi nozzle pressure measured at the base of the nozzle again with one exception: a 2,500-gpm nozzle which had to be tested at a lower pressure in order to keep the flow under the 2,000-gpm limit of the recording devices. All discharge data were automatically recorded on a Taylor Instrument Co. meter chart for permanent record.

Actual flows in gpm were determined at the various pattern settings of the adjustable nozzles as stated by the manufacturers. The subcommittee agreed on a uniform method of measuring the angle of pattern in order to standardize the tests since the manufacturers' settings varied in degree. Photographs of the committee settings were taken and later during the data correlation, the actual angle of setting was measured with a protractor and recorded in the report. It was felt by the subcommittee that standards of measuring and setting pattern angles should be established to promote uniformity among the manufacturers.

The judgment of the subcommittee was also employed as the factor for determining a straight stream for an adjustable nozzle. In addition, all adjustable nozzles were tested at the wide-open or maximum-pattern setting if this was greater than 90 degrees.

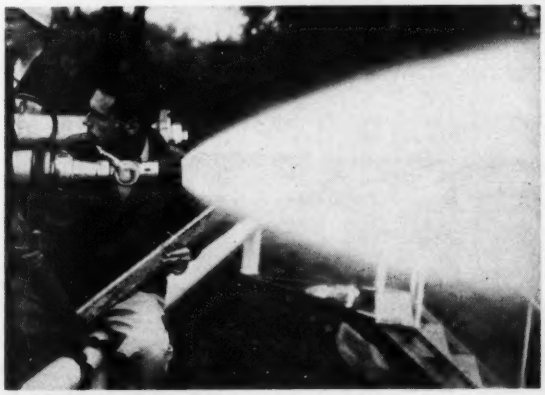
The subcommittee has recommended that further studies be

Continued on page 825



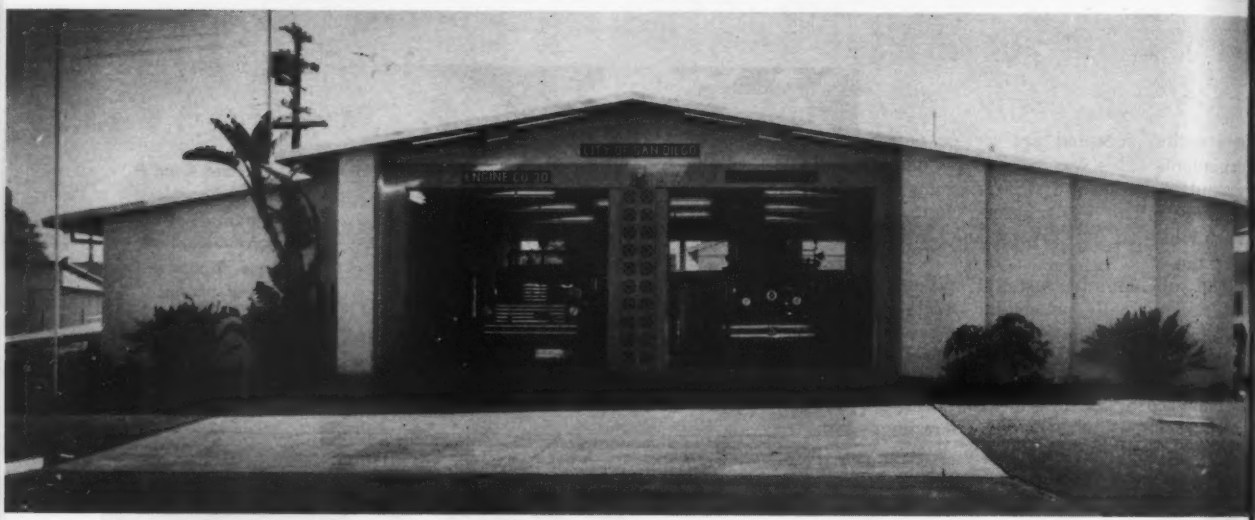
Rockwood Type B 500-gpm nozzle photographed when pressure was 90 psi. Measurement of photos when discharging at 100 psi indicates set pattern angle of 70 degrees

Akron Fog Hog No. 1245 discharging in straight stream position. Difficulty of determining what constituted good stream resulted in range of discharge from 300 to 367 gpm



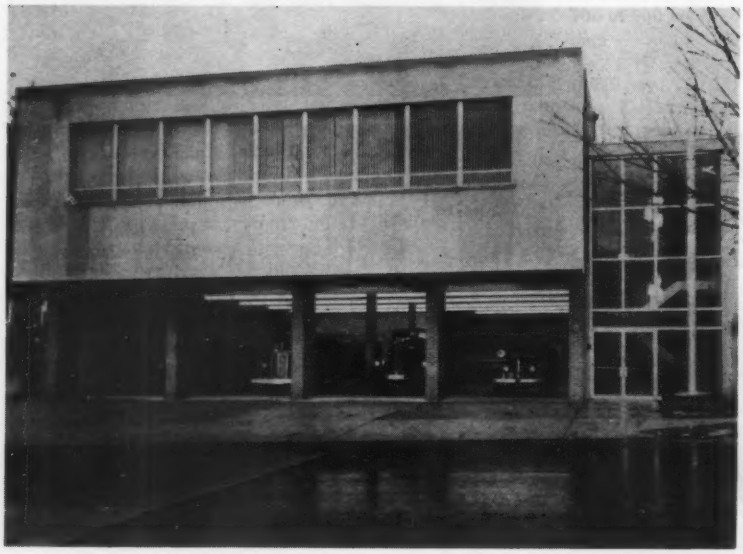
Powhatan hand line fog nozzle was tested in conjunction with heavy stream devices. Angle of 60 degrees, set by subcommittee provided discharge of 195 gpm

Sheffield Township, Ohio, Fire Station No. 2 was designed by Architect Michael M. Kane, A.I.A., to compliment residential area in which it is located. All public rooms are air-conditioned

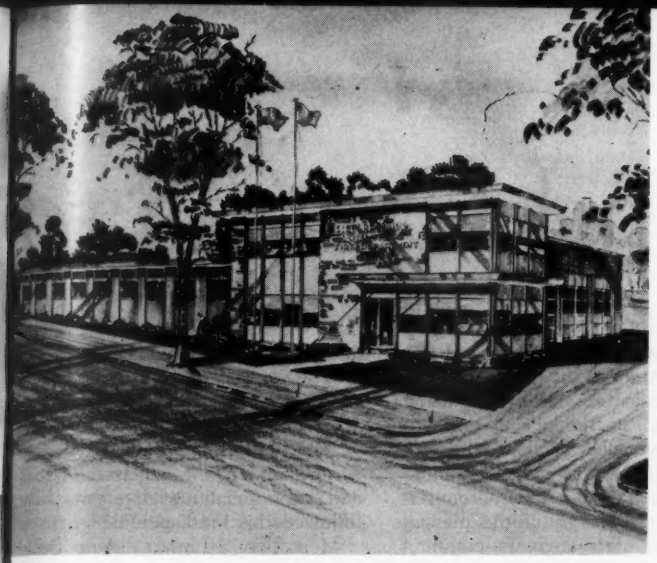


Functional beauty marks new

From coast to coast the architecture of recently built fire stations reflects a continuing trend of combining beauty and utility in the buildings erected by fire departments. Many of them have been built to care for the expanded needs of the community concerned and frequently the structure is designed to provide for future expansion of the fire department. Among the selected examples noted here is one unique "portable" station which can be removed and relocated as desired as shifts in population or community building dictates.



New headquarters of Bedford Hills, N. Y., Volunteer Fire Department can house eight vehicles with ease. Architect Matthew J. Warshauer, A.I.A., designed side-hill building in such a manner it appears to float in air over apparatus—Chief Willis Goodrow



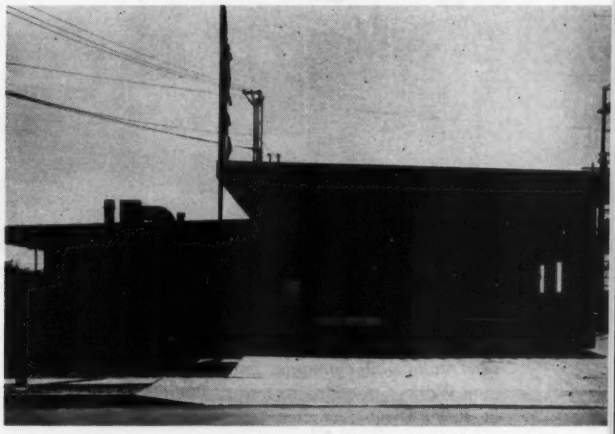
Silver Spring, Md., Volunteer Fire Department recently dedicated this new air-conditioned station in a heavily populated residential area. Architect Philip W. Mason, A.I.A., designed structure so that apparatus respond via side doors—Chief David B. Gratz

New fire headquarters of Harvey, Ill., includes space for six vehicles, a three-story drill tower and training area. Constructed at street intersection, response may be made from two sides—Fire Marshal Edward Mulder

San Diego F. D. photo by McDowell

Left: Station 30 was recently added to the "Nestor" area of San Diego, Calif., to protect newly annexed lands. Communications link with headquarters is by radio selective signaling. Familiar "half hose tower" was eliminated in favor of electric dryers—Roi B. Woolley

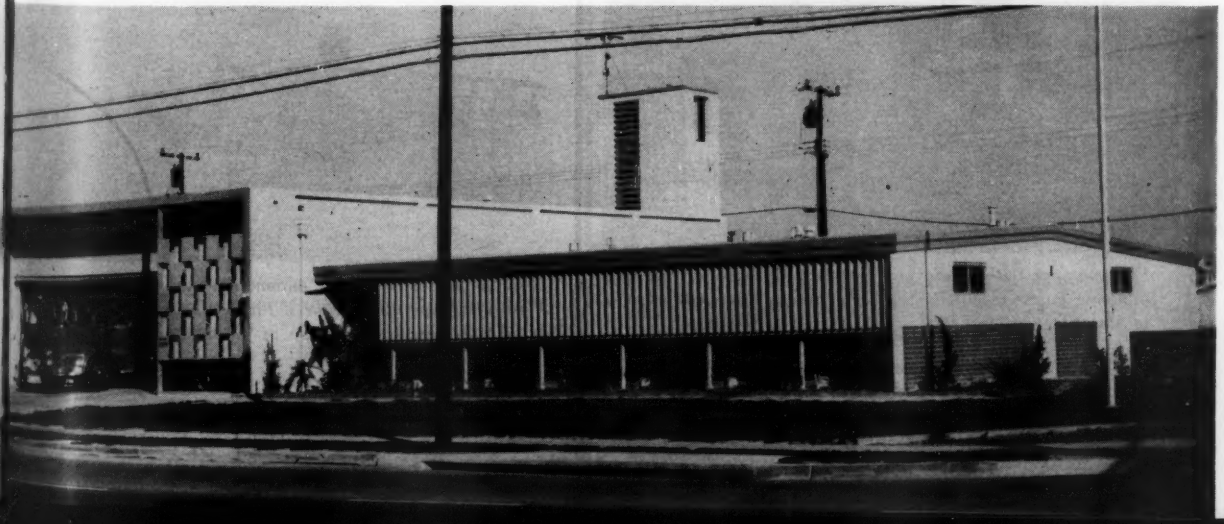
fire stations



L. A. County F. D. photo by Bird

Los Angeles County recently dedicated Station 117, a "permamanent-portable" steel building. Believed to be the only one of its type, it is designed so that it may be dismantled and moved to a new location if community growth warrants—Cliff Dektar

Santa Ana, Calif., latest station presently houses Engine 7 and is designed for future addition of truck company to protect adjacent expanding industrial tract. Fire alarm substation is included with battery and emergency generator—Chief John Garthe



From Hand Cranks to S

The early days of the automobile pumping engine

By CLARENCE E. MEEK

AFTER A FEW "horseless carriages" had appeared on the highways of Europe and America in the 1890's the French Academy selected the name "automobile" as the official designation of a "wheeled, mechanically propelled, and steerable vehicle running on a common road." This account is a brief story of some of the pioneer "automobile" fire engines—pumping apparatus powered by internal-combustion engines.

Daimler's invention in 1885 of an engine driven by fuel exploding internally was the first step toward the production of the automobile as we know it. The scheme of front-mounted engine, clutch, transmission, drive-shaft, differential and drive to the rear wheels, with steerable front wheels, was devised by M. Levassar in 1889 and subsequent developments have followed this fundamental design.

More than 10 years before Daimler's invention, steam fire engines propelled by their own power were familiar sights in several American cities, and so we can claim for the fire serv-

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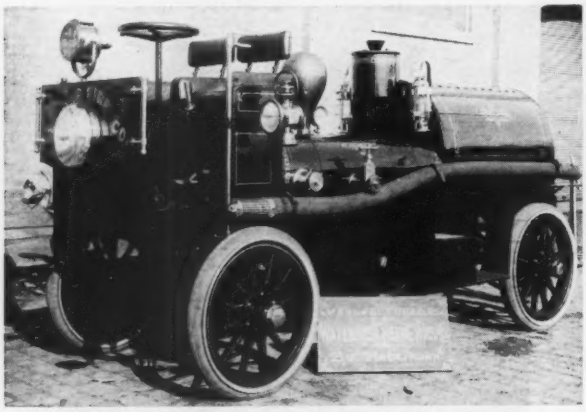
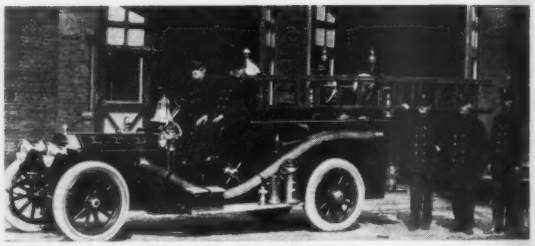
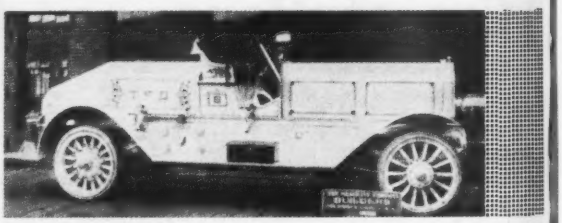


First automobile pumping engine was built by Waterous Engine Works Co. and delivered to Radnor Fire Co., Wayne, Pa., in 1906. Driving engine was mounted under seat and pump engine was mounted on rear

First pumper with single engine providing both driving and pumping power was delivered by Waterous Engine Works Co. to Alameda, Calif., in 1907



First combination hose and pumper was a Webb placed in service in Lansing, Mich.



First Seagrave pumper built in 1911 had 1,000-gpm capacity and introduced centrifugal pump to fire service

Robinson delivered its first automobile pumper in 1911 after 35 years in apparatus business. Piston pumper shown was delivered to Water Witch Fire Co. of Wilmington, Del.

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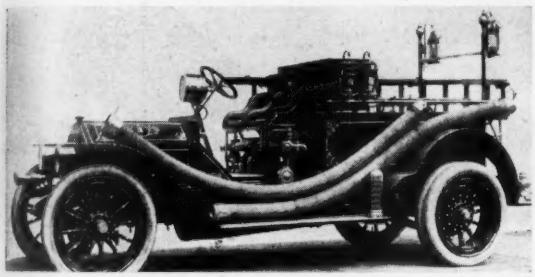
ice a priority for mechanically propelled, steerable road vehicles. This development of a successful self-propelled fire engine before the building of any other practical highway vehicle is not generally known to the people of today. The use of a differential drive on the self-propelled steam fire engine of 1872 may be the first application of this principle to road vehicles.

The earliest use of mechanically propelled vehicles in fire department service, aside from the Amoskeag self-propelled steamers of the 1870's, 1880's and 1890's, were hose carriers and chemical engines — and a few horseless buggies for chief officers. Most of the pumps then available, having been designed for direct drive by reciprocating steam engines, were not easily adaptable to drive through gears on rotating shafts of limited horsepower, and so pumping engines came along several years after other types.

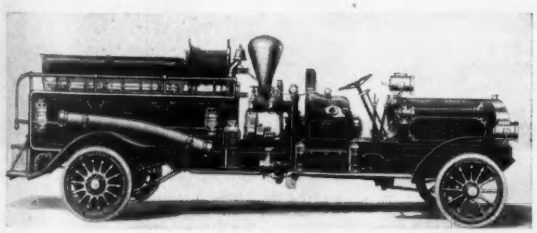
Other reasons for the early priority given hose, chemical and ladder apparatus were the ease of transferring the bodies and equipment of horse-drawn apparatus to motor car chassis, and the reluctance of responsible officials to experiment with unproven ideas in such vital fire service as pumping. Steam fire engines were reliable, highly developed mechanisms which should not be replaced with new, untried and underpowered apparatus! It is significant that as late as 1912, New York City included 28 tractor-drawn Metropolitan steamers in its yearly replacement program, accepting gasoline power for propulsion but not for pumping.

The earliest fire engines with pumps

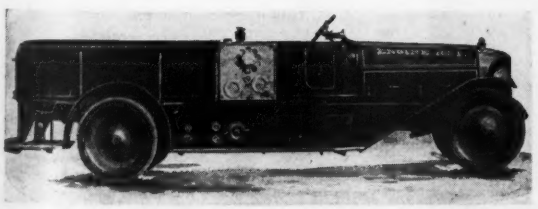
Continued on page 799



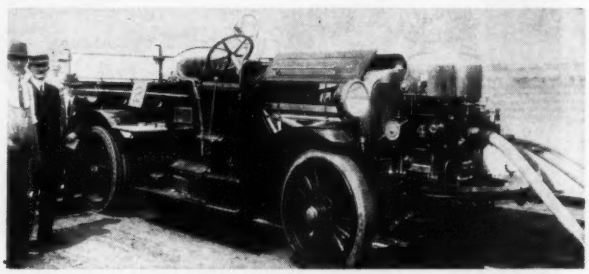
First American LaFrance gasoline pumper was delivered to San Antonio, Tex., in 1911, and mounted a rotary gear pump



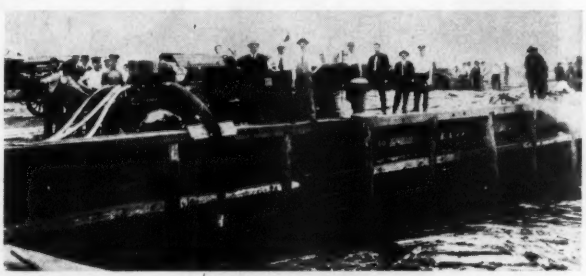
Original Mack pumper built in 1911 for Phoenixville, Pa., bore little resemblance to those which followed



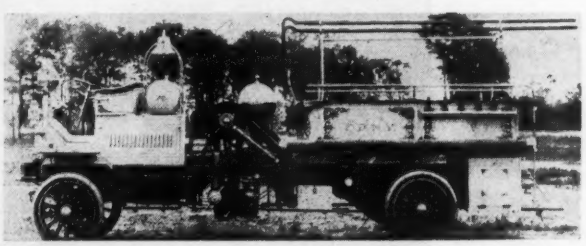
Streamlined Universal demonstrated in Battle Creek, Mich., in 1912, used worm drive and mounted a 1,000-gpm 3-cylinder, double-acting piston pump



John Ahrens (extreme left) poses with Ahrens-Fox pumper during 1913 New York tests. The first model A was delivered to Rockford, Ill., on January 9, 1912



Pumper tests at International Association of Fire Engineers convention in 1913 was milestone event in early gasoline pumping engine era



Early Knox pumper was exhibited at Grand Central Palace during 1913 I.A.F.E. convention

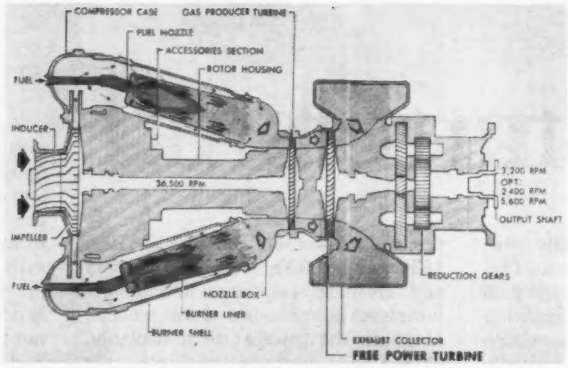


Fig. 1. Basic flow and elements diagram of internal combustion gas turbine engine. Turbine engine is single-stage free-turbine type

Gas Turbine Engines for Fir

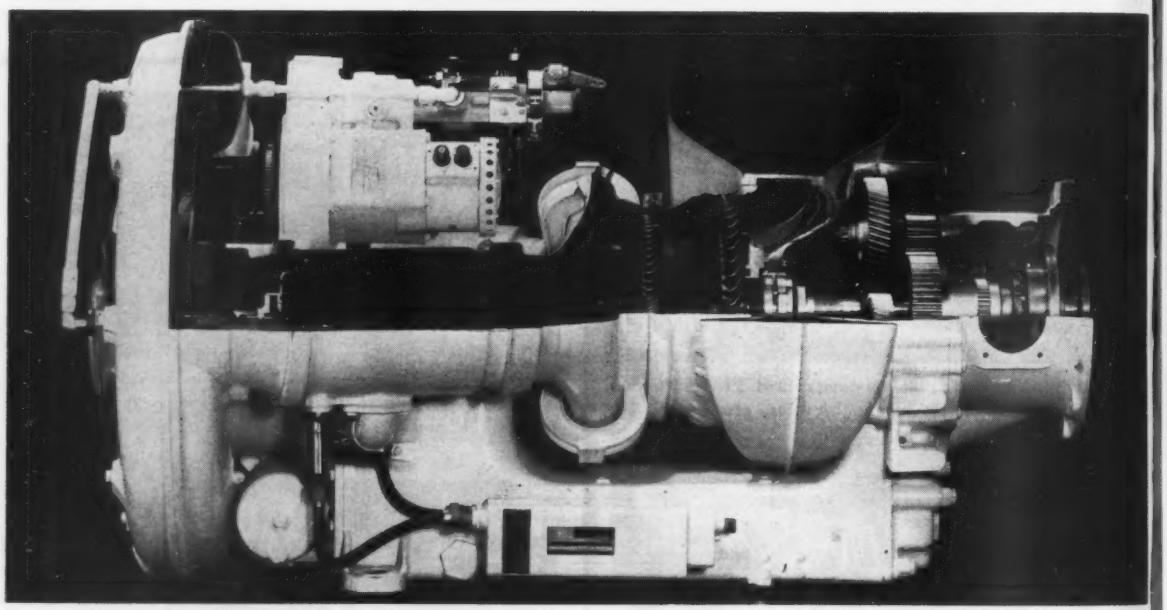


Fig. 2. Cutaway view of 502 gas turbine engine to show operating elements
—*Photo courtesy Boeing Airplane Co.*

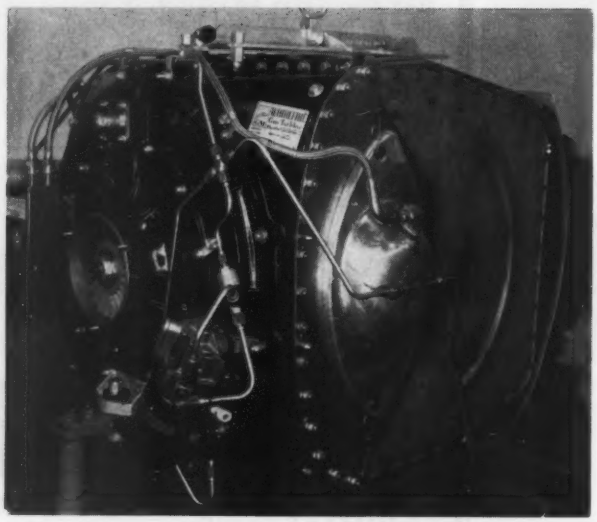
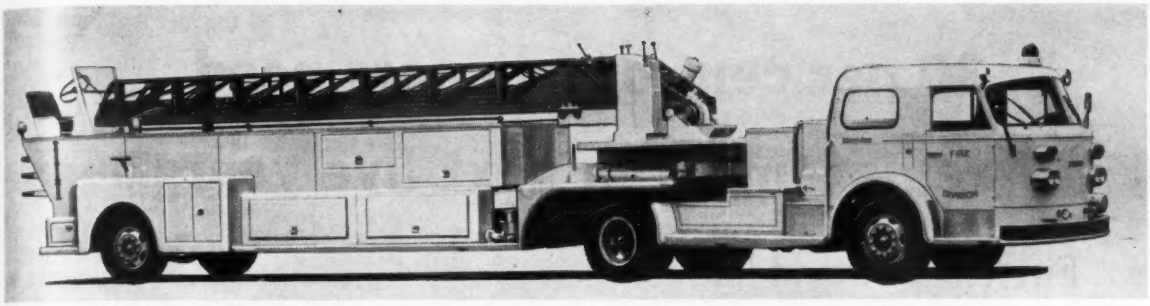


Fig. 3. Allison gas turbine engine Model GMT-305 Whirlfire complete for installation—*photo courtesy Allison Division, General Motors Corp.*

Fig. 4. (right): Section view of Allison GMT-305 gas turbine (225 hp) showing operating elements—*photo courtesy Allison Division, General Motors Corp.*



World's first gas-turbine-powered production automotive vehicle—an aerial ladder for the Seattle, Wash., Fire Department

Fire Apparatus

By HUBERT A. WALKER*

THE JET AGE is no longer exclusive for aircraft—the fire service is now a part of it too! With the purchase of fire fighting equipment powered by gas turbine engines, the fire service becomes the first to adopt this type of power plant in production automotive vehicles.

Gas turbine engines have been developed in three general classifications: (1) As a jet engine for aircraft use, using the thrust of the exhaust for power; (2) As a "prop-jet" engine, using the shaft power through gearing to rotate an aircraft propeller; (3) Using the turbine shaft power in combination with suitable gearing (like the "prop-jet" engine) to operate electric generators and other equipment previously powered by piston type engines.

The third classification is our principal interest as applied for automotive use. Several engine manufacturers have developed and have under test gas turbine engines which will shortly be made available for automotive use.

The Boeing Airplane Company is the first to offer this new type of power on a production basis. The Boeing Model 502 gas turbine engine has been under test in all classes of service for over 10 years. The outstanding performance and service record will justify the higher first cost for this type of power.

The principal advantages are:

1. Weight saving which contributes to better road performance. The gas turbine engine weighs only 10 per cent to 12 per cent of a piston-type engine of comparable horsepower with its cooling system. No cooling system is required with the gas turbine engine.

2. Better acceleration and hill climbing ability due to higher torque output and more uniform torque over the entire operating range.

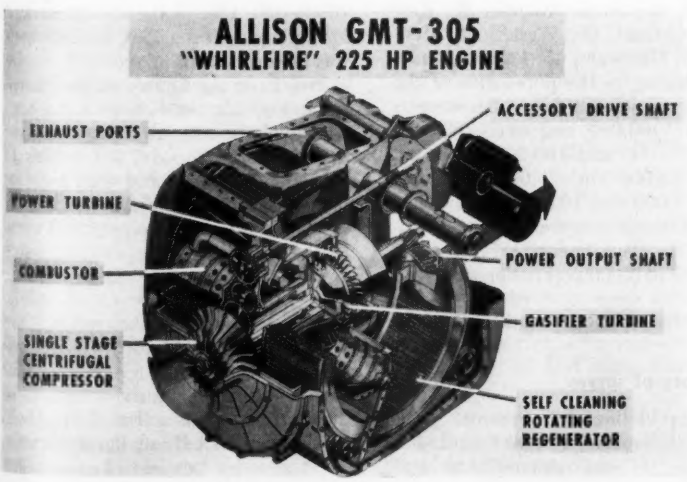
3. Not sensitive to type of fuel. Standard gasoline, kerosene, jet engine fuel (JP4) and diesel oil are acceptable. An adjustment is usually provided for a specific-type fuel.

4. Fast starting, no choking or warm-up required. In approximately 10 seconds the engine is ready to move the vehicle with full power available.

5. No ignition system, only a single glow plug is required to ignite the mixture. After the turbine is "firing," the glow plug is not required in operation. The turbine is stopped by shutting off fuel supply.

6. No cooling system. The turbine does not require a cooling system. No auxiliary cooling system is required for pumping operation.

7. Very little maintenance is required. Usually oil change and lubrication constitute the maintenance. The performance record of all experimental and production turbine engines indicate no major maintenance is required under 50,000 engine miles. This mileage is greater than the actual miles ever accumulated during the entire service life of fire apparatus.



Principle of operation

The gas turbine engine consists of two major sections: A gas producer section contains a single entry centrifugal compressor coupled to a single stage axial flow turbine, two cross-connected combustion chambers of the through-flow type, and an accessory-drive section. The power-output section incorporates a second axial flow turbine, reduction gearing and output

Continued on page 820

* *Manager, F.D.A. Sales Engineering, American LaFrance*

30 per cent of pumpers need replacement in next five years

Fire chiefs would like to replace 13 per cent of pumpers and 16 per cent of aerials at once

By FRANK HANIFIN

THE GRANDDAD of operational fire apparatus in the United States would appear to be a 1906 water tower, which a New England department admits must be towed. In any event, it is the oldest piece of apparatus reported in a survey recently conducted by FIRE ENGINEERING. Of more practical import, the survey disclosed that the chiefs who replied believe that they need an additional 333 pumpers to bring their departments up to full strength; that many chiefs whose departments do not possess rescue trucks feel that they should have them, and many others believe they should have additional rescue units. As might be expected, the trend appears to be away from service ladders and hose wagons to aerials, triple combinations, quads and quints.

Information was received from 855 departments in the United States, including Ketchikan and Fairbanks, Alaska, and Honolulu, Hawaii. Geographically, the replies were distributed as follows: New England, 114 departments; Middle Atlantic, 136; East North Central, 194; West North Central, 80; South Atlantic, 90; East South Central, 26; West South Central, 62; Mountain, 45; Pacific, 108.

According to the population of the community served, the replies were as follows: 100,000 and over—69; between 25,000 and 100,000—276; between 10,000 and 25,000—320; between 5,000 and 10,000—178. While the questionnaires were directed primarily to departments serving communities of 5,000 population and over, 12 returns were received from towns of less than 5,000 population.

Accuracy of survey

In tabulating the returns, some minor discrepancies were found. For example, in one geographical area which reported 596 pumpers, the year of purchase was given for only 532. In other instances, chiefs reported as pumper-ladders, aerial trucks with small booster pumps. Some reported as lighting trucks other apparatus which carried portable generators and lights, and some listed as high-pressure fog pumpers, pumpers with separate high-pressure fog pumps. Obvious errors have been corrected.

Based on the percentage of returns, the geographical pattern and the population brackets covered, the Editors believe the survey gives a well-defined view of apparatus conditions and adequacy and the trends in apparatus replacement.

While the form contained 24 questions, because of subdivisions, 84 items were covered.

The replies reported 4,325 pumpers of various capacities. Of these, 3,354 are triple combinations (77½ per cent), and 273 are equipped with separate high-pressure fog pumps. While 1,313 or 30 per cent of these pumpers are 15 or more years old, the fire chiefs indicated that 583 (13.4 per cent) needed immediate replacement. Most of the pumpers slated for replacement are used as spare or reserve units.

Of the 959 aerials reported, approximately two-thirds (641) have metal ladders. Sixty-four aerials are listed for replacement. Like the pumpers in this category, these trucks are used mostly as spares and reserves. In addition to these replacements, the replies indicated that the departments covered believed they needed an additional 189 aerials. One of the aerials marked for replacement is a 1916 model which was factory-rebuilt in 1932.

Projecting the figures on the pumpers and aerials, we believe it can conservatively be estimated that there are 51,600 pumpers and 7,191 aerials in the United States; and that there is presently, or shortly will be, a need for nearly 7,000 new pumpers and more than 450 aerials.

Aerials increasing

Ninety-four of the 165 service ladder trucks reported are marked for early replacement. Survey replies indicate that all but a few of these will be replaced, not by similar apparatus,

Continued on page 805

Distribution of Survey Returns

	Per cent of fire departments	Per cent of returns
New England	16	13
Middle Atlantic	32	16
East North Central	17	23
West North Central	6	9
South Atlantic	9	11
East South Central	2	3
West South Central	5	7
Mountain	3	5
Pacific	10	13

Apparatus Inventory of 855 Departments Reporting

	Number In Service	Needing Replacement	Additional Needed
Pumpers	4325	583	333
Pumper-Ladders	286	23	73*
High-Pressure Fog Pumpers	125	14	16
Aerial Ladder Trucks	959	64	189
Service Ladder Trucks	165	94	27
Crash Trucks	45	10	18
Hose Wagons	210	31	27
Water Tank Trucks	287	33	50
Rescue Trucks	387	44	74
Ambulances	296	57	21
Squad Cars	130	9	
Foam Trucks	52	5	
Lighting Trucks	91	12	
Fire Alarm Trucks	284	47	
Shop Service & Repair Trucks	265	25	
Chemical Trucks	16	3	
Grass and Brush Fire Trucks	216	47	
Salvage Trucks	56	6	
Pick-Up Trucks	387	64	
Chief's Cars:			
Sedan or Coupes	994		
Station Wagons	420		
	9,996	1,171	828

*Purchase Contemplated

Aerial view of destruction on morning following fire. Baptist Hospital is at top of photo. The Maternity Wing of John Gaston Hospital is at right—*Wide World photo*

Hospitals threatened during Memphis Russwood Park blaze

Five alarms sounded for fire which reached near-conflagration

EXTENSIVE WOOD construction, coupled with the wide open expanses of a baseball park and very high winds, created an extremely dangerous fire condition in Memphis, Tenn., on the evening of April 17. In all probability, there has never before been a fire in this city with the destructive potential of the near-conflagration which destroyed Russwood Park and several other buildings, and caused heavy damage to others, including two large hospitals. In addition, 25 automobiles were destroyed or damaged.

Most serious was the potential life hazard involved in this fire. It was only through the combined factors of good fortune, good employee training, good building construction and the ability to concentrate quickly a large force of firemen and fire fighting equipment that prevented a serious loss of life.

Russwood Park was built in 1921 and served as the home of the Memphis Chicks, a Southern League baseball team. It covered an area of six acres. The park ran about 300 feet east along the north side of Madison Avenue, from Hospital Place, and extended north from Madison for about 550 feet along Hospital Place. Although some of the seating areas were built on reinforced concrete, there was a considerable area containing wooden seats. A wood-deck roof with unprotected heavy steel framing covered a large portion of the stands along the Madison and Hospital Place sides. In addition, a heavy wood fence, from 12 to 20 feet high, surrounded the park on three sides.

As in most old structures of this type, countless coats of paint had been applied to woodwork, the last one only 10 days before the fire, and the grandstand had 14 layers of roofing—having been recovered to this extent over the years.

The fire is believed to have started on the west side of the ballpark at about 7:25 p.m. The fire department was called at 7:28 p.m. Upon the initial response the blaze did not appear to be serious, but before a line could be laid, flames raced before a 22-mph wind to involve most of the park. Additional alarms were sounded at 7:33, 7:35 and 7:38. The last, a Signal-5, requested all available apparatus and a total of 27 companies worked at the scene. More than 30 pieces of apparatus and all off-duty personnel re-

Closeup of ball park ruins from roof of Baptist Hospital. Russwood Building, fronting on street, was severely damaged by direct flame contact

—Memphis F. D. photo

View looking northwest on Madison Avenue about 10 minutes after receipt of alarm. Flames extended over top of Baptist Hospital at left

—Memphis Commercial Appeal photo by Williams

Turrets being employed on Madison Avenue at Hospital Place to bring fire in adjacent exposures under control. Memphis Fire Department "Multi-Master" apparatus in foreground

—Memphis F. D. photo

Occupancies Destroyed or Damaged

Location	*Occupant*	*Damage*
900 Madison	Nightingale Restaurant	Heavy damage in rear
900 Madison	Apartments on second floor	Heavy damage
904 Madison	Crawford Barber Shop	Medium damage (water)
904 Madison	Apartments on second floor	Heavy damage
906 Madison	Memphis Optical Dispensary	Heavy damage
907 Madison	Apartments on second floor	Heavy damage
908 Madison	Professional Uniforms	Heavy damage
908 Madison	Apartments on second floor	Heavy damage
912 Madison	Harry's Place Restaurant	Heavy damage
914 Madison	University Jewelers	Heavy damage
922 Madison	Raiford Shoes	Heavy smoke and water damage
924 Madison	J. Morris, Dentist	Heavy smoke and water damage
926 Madison	Delta Surgical Supply Co.	Heavy damage
928 Madison	Walker-Reynold Florist	Heavy damage
932 Madison	Dori Uniforms	Heavy damage
934 Madison	Snell Limb & Brace Co.	Heavy damage
944 Madison	Dobbs House	Heavy damage
946 Madison	Watkins Florist	Heavy damage
948 Madison	1st National Bank Branch	Smoke and water damage

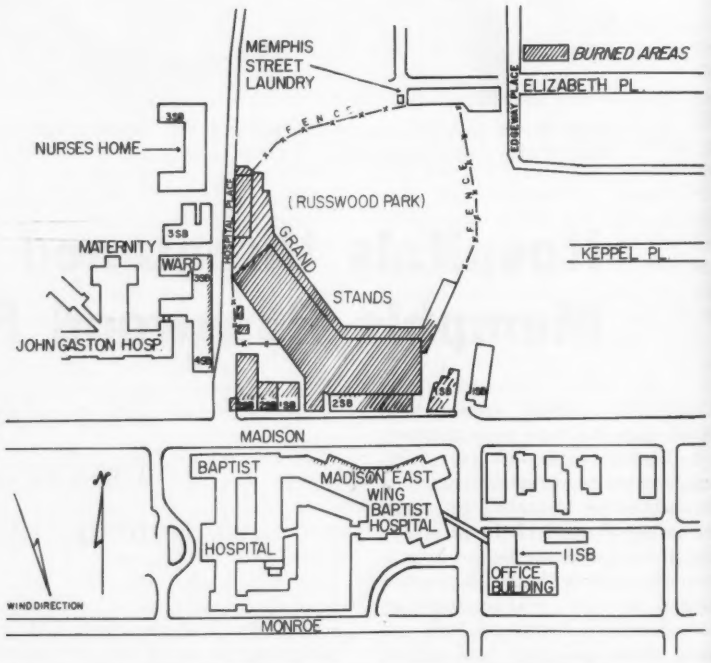


Diagram of fire ground. Crosshatching indicates burned areas

sponded. By this time the grandstands were fully involved and the fire had extended into adjacent buildings.

Gusts of wind up to 35 and 40 mph carried heat, smoke and a shower of sparks against the 13-story Madison East wing of Baptist Hospital, across the street from the ballpark. Radiant heat cracked or shattered windows on the north side of the building. In addition, the maternity wing of John Gaston Hospital, a three and four-story building, just west of the ballpark, caught fire at several points and had to be evacuated. Employees of both hospitals had been trained in evacuation procedures and did a tremendous job in the face of rising panic to remove patients from the threatened areas.

Initial attack on the fire by first-alarm companies was made with at least two hand lines, both of which were ineffective due to the rapid headway which the fire made. Once the multiple-alarm companies began to arrive, attack was made from the north, east and west sides.

The fire spread with amazing speed through the combustible stands. Not more than four or five minutes after the second alarm had been sounded, flames were clearly visible from the

Continued on page 803

Time was a consideration during workshops. To save every moment possible, all participants were served lunch at the training center *—All photos by L. A. County F. D.*

National OCDM fire seminar held in Los Angeles County

THE FIRST of four national seminars, recommended by the National Fire Defense Advisory Committee to Director Leo A. Hoegh, Office of Civil and Defense Mobilization, was held in Los Angeles, July 12-14. The Los Angeles County Fire Department, Chief Keith E. Klinger, was the host organization, with representatives from 10 sponsoring organizations in attendance. These included the International Association of Fire Chiefs, Department of Agriculture Forest Service, Department of Interior, Association of State Foresters, National Fire Protection Association, National Board of Fire Underwriters, International Association of Fire Fighters, OCDM Regions 7 and 8, National Association of State and Territorial Directors, and United States Civil Defense Council.

The objective of the seminar was the developing of methods and materials for the OCDM staff and command course for fire defense leaders scheduled to begin in September 1961.

Supervisor Warren M. Dorn, Los Angeles County, welcomed the participants at the opening session in the L. A. County Fire Department Training Center. He was followed by OCDM Deputy Assistant Director Barent Landstreet who outlined the objectives of the seminar. Setting the pace of the study to follow were Evar P. Petersen, OCDM regional administrator, Region 7, who reported on the state of readiness of national defense, and Colonel George D. Rich, deputy assistant director, OCDM Biological and Radiological Defense, who reported on fire defense under nuclear attack.

The entire workshop program was directed by Battalion Chief Noel E. Manchester, special services, L. A. County Fire Department, with Dr. John Gerletti, School of Public Administration, University of Southern California, outlining the purpose and concepts and acting in a guidance capacity.

The following participated in the program:

Workshop No. 1—How to Plan and Organize for a Staff and Command School: Dr. Desmond Anderson, director, Civil Center Division, School of Public Administration, University of Southern California (chairman); Robert C. Byrus, director, Fire Service Extension, University of Maryland; James K. Mace, deputy state forester, California; Chief William J. Taylor, Burbank, Calif.; William Small OCDM Training and Education Office; D. E. Barrett, director, Ontario, Canada, Fire College; Albert Albertoni, Oakland, Calif., Fire Department and vice president, International Association of Fire Fighters.

Workshop No. 2—Planning and Organizing for Mass Fire Control: Chief William L. Miller, Los Angeles (chairman); Chief John Garthe, Santa Ana, Calif.; Roger R. Robinson, area fire control officer, Federal Bureau of Land Management, Anchorage, Alaska; Donald M. O'Brien, editor, FIRE ENGINEERING; Chief Harold Bowhay, Public Safety Division, California Disaster Office; B. Richter Townsend, secretary-manager, International Association of Fire Chiefs; Loren Tucker, supervisor, fire control, Department of Natural Resources, Olympia, Wash.; Joseph Peterson, fire control officer, Angeles National Forest; Roy Hoover,

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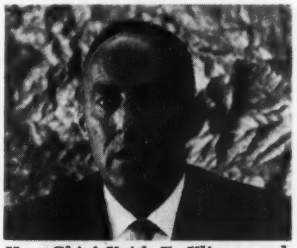
Battalion Chief Noel Manchester, spark plug of the seminar, kept program moving with split-second precision and earned plaudits of entire group



Host Chief Keith E. Klinger welcomed visitors and took active part in workshop sessions. The entire group thanked him in form of resolution to County Board of Supervisors

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Southwestern Assn.
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CHIEF ADRIAN J. MEYERS
Chairman
Program Committee
Grand Rapids, Mich.

CHIEF GEORGE L. HOLZSCHUH
Host Chief
Rochester, N. Y.

CHIEF ALBERT KIMBALL
Chairman
Boy Scout Committee
Hingham, Mass.

PROGRAM

IAFC Conference, Rochester, N. Y.

Saturday, September 10

10:00 a.m. Board of Trustees Meeting of International Fire Administration Institute—Hotel Manger
4:00 p.m. Executive Committee Meeting—Hotel Manger
7:00 p.m. Registration—Hotel Manger

Sunday, September 11

10:00 a.m. Registration—Hotel Manger
1:30 p.m. Ohio Fire Chiefs Association Meeting—Hotel Manger
2:00 p.m. Board of Directors Meeting—Hotel Manger
3:00 p.m. Great Lakes Association of Fire Chiefs Meeting —Hotel Manger
4:00 p.m. Committee Meetings—Hotel Manger

Monday, September 12 (Chief A. H. Lintelman, presiding)

8:00 a.m. Registration—War Memorial
9:00 a.m. Exhibits Open—War Memorial
9:30 a.m. Opening Session
11:00 a.m. Memorial Service
1:30 p.m. Business Session
1:45 p.m. Report of the Treasurer, Chief G. A. Mitchell
1:55 p.m. Report of the Executive Director, B. Richter Townsend
2:10 p.m. **How About Mutual Aid in a County of 700,000?** Edward P. McKinney, President, Monroe County Fire Advisory Board
2:35 p.m. **Fire Communications—How Rochester and Monroe County Plan for the Future**—Joseph Semans, Manager, Electronics Division, General Railway Signal Company
3:00 p.m. **Report of Committee on Communications,** E. L. Heath, Chairman
3:15 p.m. **Report of Boy Scout Committee,** Chief Albert W. Kimball, Chairman
3:30 p.m. **Report of Committee on Arson,** William D. Rossiter, Chairman
4:00 p.m. Committee Meetings—War Memorial

Tuesday, September 13 (Chief William J. Taylor, presiding)

9:30 a.m. Business Session
9:45 a.m. **Report of Committee on Civil Service Classifications,** Henry J. McFarland, Chairman
Report of Committee on Salaries, Chief Edward F. Deignan, Chairman
10:00 a.m. **Do We Need to Change Fire District Planning?** —Jerome Kornfeld, Chairman, Law Committee, New York State Fire District Officers Association
10:30 a.m. **New Psychology in Fire Investigation and Arson**—Martin Scott, Fire Marshal, New York City Fire Department
11:00 a.m. **How to Use Photography in Fire Investigation** —Harris B. Tuttle, Sr., Consultant, Law Enforcement Photography, Eastman Kodak Company
11:30 a.m. **Report of Committee on Nominations**
1:30 p.m. **Report of Committee on Constitution and By-Laws,** Fire Marshal William J. Scott, Chairman
1:45 p.m. **How Does Fire Originate?**—Commander Henry S. Morton, United States Navy
2:15 p.m. Report—Action on Resolutions, 86th Annual Conference
2:30 p.m. **The Volunteer and the Fire Service**—Chief David B. Gratz, Silver Spring, Md.
3:00 p.m. **The OCDM Reports to the Fire Service**—Lewis E. Berry, Assistant Director for Plans and Operations, Washington, D. C.
3:30 p.m. **Fire Prevention Committee Report,** Chief Jay W. Stevens, Director of Fire Prevention

Wednesday, September 14 (Chief Edward F. Deignan, presiding)

9:00 a.m. Polls Open
9:30 a.m. **Report of Fire Research Committee,** Chief C. Gray Burnett, Chairman
Report of Committee on Fire-Police Consolidadation, Chief Edward F. Deignan, Chairman
Report of Latin-American Advisory Committee, Chief Raul Gandara, Chairman
10:00 a.m. **What to Do When Fire Strikes You**—Wayne Jenkins, Chief, Bureau of Fire Prevention, State of Ohio, Columbus
10:30 a.m. **Fire Protection—A Municipal Savings Account** —Everett W. Fowler, Chief Engineer, National Board of Fire Underwriters, New York
11:00 a.m. **Italy's Modern Fire Service**—General Osvaldo Piermarini, Rome, Italy
11:30 a.m. **Trip to Fire Academy**
1:00 p.m. Polls Close
1:30 p.m. **Demonstration by the Rochester and Monroe County Fire Departments**—Fire Academy
1:30 p.m. **Report of Committee on Nominations and Elections**—War Memorial
2:30 p.m. **Demonstration by Exhibitors**—Fire Academy

Thursday, September 15 (Chief A. H. Lintelman, presiding)

9:30 a.m. Business and Committee Reports
Resolutions Committee
Joint IAFC-NFPA Fire Apparatus Committee
Exhibit Committee
Membership Committee
Advisory Committee on Atomic Problems
Training Committee
Fire Safety on Super Highways
11:00 a.m. Reports of Divisions, Action on Committee Reports, Installation of Officers

Ladies Program

Sunday, September 11

1:30 p.m. to 6:00 p.m. Hospitality Room—Manger Hotel

Monday, September 12

11:00 a.m. Memorial Service—War Memorial
Afternoon Bus Tour and Visit to Eastman House
Evening Barnard Fire Department to host "Get Acquainted" Party

Tuesday, September 13

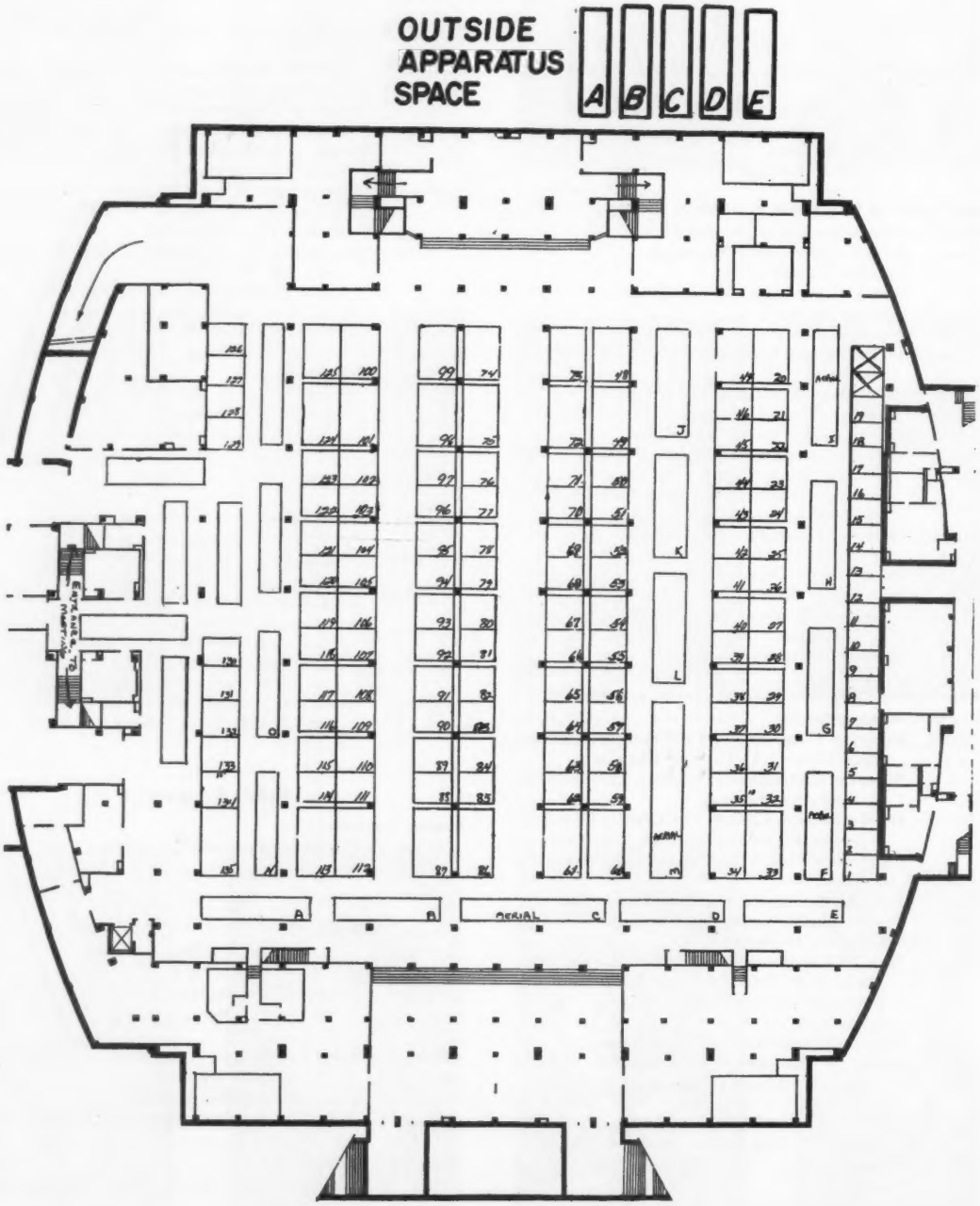
Morning Visit to Kodak Park
Afternoon Luncheon and Entertainment
Evening Entertainment Program—War Memorial

Wednesday, September 14

Noon Luncheon at Fire Academy and Afternoon Program
Evening Banquet—War Memorial

International Association of

Exhibit Floor — Rochester War Memorial — September 12-15



# of Fire Chiefs — Exhibitors

Company	Booth
Air Shields, Inc.	116
Akron Brass Mfg. Co., Inc.	60
Alim Company	45
American Biltrite Rubber Co., Boston Woven Hose & Rubber Div.	44
American City Magazine	2
American District Telegraph Co.	19
American Fire Apparatus Co.	135A
American Fire Pump Co.	135
American LaFrance Corp.	112
American Telephone & Telegraph Co.	120
Antrex Corporation	59
Ardmore Products	37
Atlas Safety Equipment Co.	74
Batrow Laboratories	11
Bean Div., John, Food Machinery & Chemical Corp.	24
Bi-Lateral Fire Hose Co.	10
Blackhawk Manufacturing Co.	115
Blackinton & Co., Inc., V. H.	56
Boy Scouts of America	3
Carpenter Manufacturing Co.	69
Chevrolet-Central Office	50
Circul-Air Corp.	87
Cornelius Company	62
Dazl-Lite Products	30
Dictaphone Corporation	6
Divco-Wayne Corp.	96
Doho Chemical Corp., The	103
duPont de Nemours & Co., (Inc.), E. I.	104
Elkhart Brass Mfg. Co., Inc.	82
Eureka Fire Hose, Div. U. S. Rubber Co.	100
Fabric Fire Hose Co.	68
Falcon Alarm Co., Inc.	118
Federal Sign and Signal Corp.	113
Fire Detectors, Inc.	8
Fire Engineering	94
Ford Division	130
FWD Corp., The	126
Fyrepel Products, Inc.	76
Fyr-Fyter Company, The	108
Gamewell Company, The	91
G.M.C. Truck & Coach Div.	54
Gerstenslager Co., The	123
Globe Mfg. Co.	134
Goodrich Industrial Products Company, B. F.	57
Goodyear Pumps, Inc.	106
Hale Fire Pump Co.	84
Hallett Mfg. Co.	71
Hannay & Sons, Inc., Clifford B.	80
Hercules Motors Corp.	12
Hess & Eisenhardt Co.	124
Hewitt-Robins	65
Higgins Company, The Thomas M.	9
Highway Products, Inc.	7
Hobby Enterprises, Inc.	17
Howe Fire Apparatus Co.	22
Koehler Mfg. Co.	4
Kohler Company	79
Leece-Neville Co.	20
Mack Trucks, Inc.	48
Mars Signal Light Co.	95
Maxim Motor Co.	35
McIntire Brass Works, F. N.	36
Metcalf, Inc.	38
Mine Safety Appliances Co.	75
Minnesota Mining & Mfg. Co.	114
Mobile Aerial Towers, Inc.	31
Motorola Communications & Electronics, Inc.	72
National Fire Protection Assn.	23
North American Signal Co.	43
Nuclear Electronics Corp.	14
Ohio Chemical & Surgical Equipment Co.	119
Onan & Sons, Inc., D. W.	52
Oxygen Service & Sales Co.	53
Phon-Alarm Division	73
Pirsch & Sons, Inc., Peter	21
Plectron Corp.	64
Powhatan Brass & Iron Works	101
Rockwood Sprinkler Co.	88
Santa Rosa Nozzle, Inc.	42
Sarole, Inc.	102
Scott Aviation Corp.	86
Seagrave Corp.	32
Simpson & Sons, Wm.	1
Sireno Co., Inc., The	129
Smith & Co., D. B.	77
Snorkel Fire Equipment Co.	47
Standard Fire Alarm & Signal Co.	18
Stephenson Corp.	5
Superior Corp.	26
Super Vacuum Manufacturing Co.	58
Trilling, Emanuel	29
Ward LaFrance Truck Corp.	46
Washington Products Co.	78
Waterous Company	33
Whelen Engineering Co.	133
Young Fire Equipment Corp.	117

Company	Apparatus Space
American Fire Apparatus Co.	"A"
American LaFrance Corp.	"B"
Bean Div., John, Food Machinery & Chemical Corp.	"G"
Chevrolet-Central Office	"K"
Ford Division	"O"
FWD Corporation	"Q"
G.M.C. Truck & Coach Div.	"L"
Mack Trucks, Inc.	"J"
Maxim Motor Co.	"M"
Pirsch & Sons Co., Peter	"I"
Seagrave Corp.	"E"

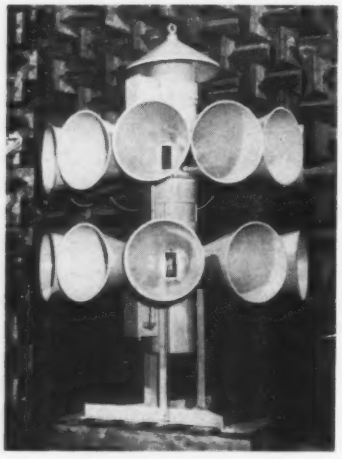
Company	Outside Exhibit Space
Howe Fire Apparatus Co.	"D"
Mobile Aerial Towers Inc.	"A"
Snorkel Fire Equipment Co.	"B"
Ward LaFrance Truck Corp.	"C"
Young Fire Equipment Co.	"E"

WHAT'S NEW

Among the Manufacturers

- products
- processes
- personalities

New Federal Fire-CD Siren



Federal Sign and Signal Corp., 13601 South Western Avenue, Blue Island, Ill., has introduced a three-tone community siren for fire and air raid warnings. Said to have been approved for OCDM matching funds, it is claimed the new unit emits a distinctive tone for fire warnings as well as the official "Alert" and "Take Cover" CD signals. It is available in 115 or 125-decibel models, with a portion of the installation cost also eligible for OCDM matching funds.

New Dry Chemical Unit

American LaFrance, Elmira, N. Y., announces a compact, dry chemical fire extinguisher for protection of Class B and Class C risks.

Designed for one-hand operation, Model PDC 2½B is approved by Underwriters' and Factory Mutuals Laboratories and by the U. S. Coast Guard. Underwriters' rating is 4B:C.

It is said to have effective discharge time of 10 seconds and to be easily recharged.

New Walter Crash Unit

The Walter Motor Truck Co., Voorheesville, N. Y., recently delivered a Model CF crash vehicle to the Federal Aviation Agency, Washington National Airport. Constructed with a "unitized" body and frame entirely of aluminum, the vehicle carries 1,500 gallons of water and 300 gallons of foam liquid which is metered with a Rockwood Model D proportioner. Fiberglass plastic is used for the water tanks, fill connections and most of the valves and piping. Fire fighting equipment includes a double-barreled hydraulic power turret rated at 800 gpm; ground sweep nozzle rated at 140 gpm; and two hand lines rated at 60 gpm each. All are supplied by a two-stage Hale pump.

A single rear-mounted, V-8 gasoline engine drives the pump and provides motive power to the Walter 4-point positive drive through a torque converter. The engine, torque converter and accessories are skid-mounted for quick removal and repair.

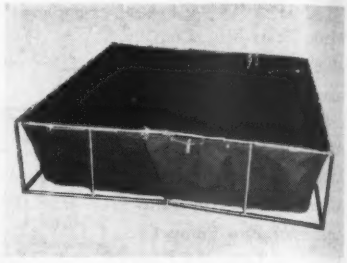
Chicago Buys School Boxes

The Gamewell Company of Newton, Mass., a subsidiary of E. W. Bliss Company, recently received an order from the City of Chicago for 1,000 master fire alarm boxes for protecting all city schools, both public and private. This will supplement 100 boxes installed earlier under an emergency program.

An ordinance passed last year requires that all schools be equipped by February 1961 with interior fire protection. The master boxes, gift of the city to the schools, will connect the interior protection systems to the fire department.

"Dump and Go" Tank

The Industrial Division of CAN-PRO Corp., 19 East McWilliams Street, Fond du Lac, Wis., announces its collapsible "Dump and Go" tank for use as a portable reservoir in areas where the water supply is not adequate for fighting fires. The unit is 10 feet square by 31 inches



deep, with a capacity of approximately 1,500 gallons, and is made of 14.9-ounce flame-resistant canvas suspended on a frame of ¾-inch structural tubing. It is claimed a canvas spout permits complete draining of the tank in a matter of seconds.

Goodyear to Build in U. S.

Goodyear Pumps, Inc., 9 Rockefeller Plaza, New York City, announces the signing of a manufacturing agreement with Warren Pumps, Inc., Warren, Mass., initiating the American production of the Goodyear Archimedean rubber-to-metal screw pump now supplied to the fire fighting, chemical, industrial and marine markets. Full production is scheduled for early 1961 at Warren's Peace Dale, R. I., plant.

Box 15 to Entertain Great Lakes Chiefs at Rochester

Great Lakes Box 15 Club of Detroit, Mich., announces it will again be hosts to the chiefs of the Great Lakes Division and their wives at the annual conference of the International Association of Fire Chiefs at Rochester in September. The club entertained the same group at the Grand Rapids convention last year, a party which was received most enthusiastically by all who attended.

The cocktail-dance party will be held this year at the Manger Seneca Hotel, conference headquarters, on Sunday evening, September 11, from 8:30 p.m. to midnight. A fine band has been booked for the occasion.

Box 15 met recently at Schuler's restaurant at Marshall, Mich., and re-elected its officers for another year. They are: President, C. T. McGraw, Circul-Air Corporation; vice president, "Stu" Spalding, Eureka Fire Hose; treasurer, Fred Fischl, Bi-Lateral Fire Hose and Grace Clark of Circul-Air, secretary. Directors chosen were: Lloyd Schafer of Gamewell, "Spud" Van Gorp of Seagrave, W. W. Woody, American LaFrance and Willis Barton, representative

for American Fire Apparatus and Fabric Fire Hose.

Bob Sutphen was elected to fill the membership vacancy left by the death of his father, the late Harry Sutphen, and Joe Sellers was elected to take Dick Voelkert's place following the latter's resignation from Elkhart Brass. Other members, all well known to the fire service include Marty Paye, E & J and Scott Aviation; Joe Platte of Bi-Lateral; Joe Fishelson of Akron Brass; Al Casse of Midwest Fire & Safety; Bill Birch of Birch Fire Equipment; Mike Dalton of Great Lakes Fire Equipment; Jim Fenton of Fenton Associates; Ralph Banks of Scott Aviation; George Clark of Fyr-Fyter; Bill Pirsch of Peter Pirsch & Sons; and Harry Pearo of American LaFrance.

Talk-Listen Megaphone

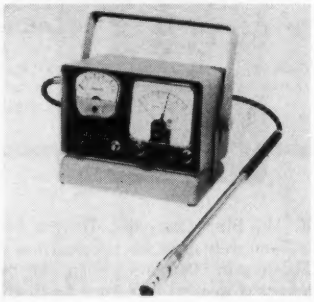
Lawrence Inc., P. O. Box 5106, Seven Oaks Station, Detroit 35, Mich., is offering a transistorized combined portable megaphone, public address system and talk-back device. The PRC-2425 is

rated at 25-watt output and said to weigh 13 pounds complete with four lantern-type batteries. By flipping a switch, it is claimed the unit becomes a sensitive listening device for talk-back and rescue purposes. It is said to be approved under O.C.D.M. matching fund program.

New Ward Pumper

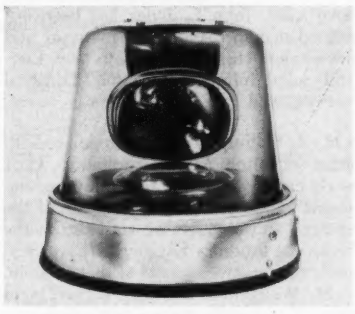
Ward LaFrance, Elmira Heights, N. Y., recently delivered this Fire Brand pumper to the Glen Burnie, Md., Volunteer Fire Department. It is powered with a 300-hp engine, mounts a 750-gpm pump and a 500-gallon water tank. A Rockwood Model B foam proportioner with a 30-gallon tank is built in and an Eastman Model 20 deluge nozzle is permanently mounted. It is also equipped with Westinghouse air brakes.

Houston Gas Detector



Houston Instrument Corp., P. O. Box 22234, Houston, Tex., has introduced a new probe-type explosive gas detector for use as a portable or fixed indicator-alarm instrument. Model 521 operates from a built-in solid electrolyte nickle-cadmium battery with battery charger, or directly from a 110-volt a.c. source. A buzzer provides an audible alarm in addition to the visible meter indication.

New Emergency Light



Dazl-Lite Products Co., Kansas City, Mo., announces an emergency vehicle light which is said to feature a 110,000 candle power beam. Designed in permanent cab roof mounting, it employs a special 110-watt bulb against a reflecting revolving plate producing 90 flashes per minute. Available in both 6 and 12-volt models, it is furnished in a choice of standard emergency colors or clear. A companion portable model is available.

Traffic Safety Flashers

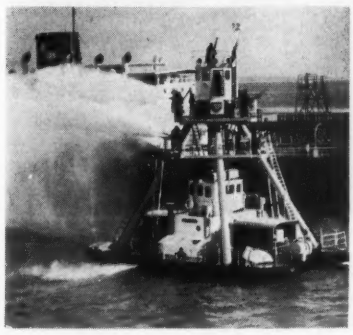
Cripe Tool Manufacturing Corporation, P. O. Box 61, Owosso, Mich., is marketing three new models of portable flashing light traffic safety devices.

Called "Safe-T-Blink", the unit employs a transistorized power unit operating from dry cells.

British Fire Float

The "BP Firemaster" catamaran fire float owned and operated by BP Tanker Company, Ltd., Swansea, was built by R. S. Hayes Ltd., Pembroke Dock, and engineered and equipped by Merryweather and Sons, Ltd., Greenwich, U. K.

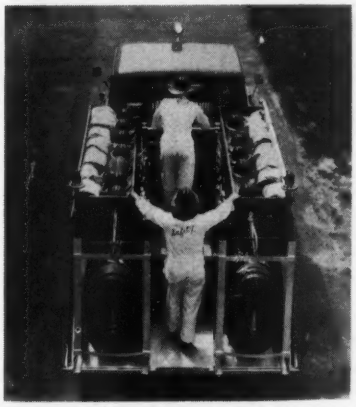
The unit is fitted with two 2-stage Merryweather turbine pumps, each direct coupled to a Dorman 6QA diesel engine providing a total capacity of 4,000 gpm at 100 psi, or 2,300 gpm at 170 psi. Water or foam can be discharged from one or all nine of the 4-inch monitors which are independently controlled. Four of these are mounted on the lower fire deck, about 23 feet from the deck; four on the mid-deck, 30 feet above; and one at the top of the 40-foot tower. The monitors are so arranged that seven can be used simultaneously in one given direction.



In addition, eight water hose lines can be employed from deck delivery heads and six deck foam heads may also be used for handlines.

Industrial Apparatus

A new industrial fire truck built by Trautweins Inc., Woodbridge, N. J., has just been placed in service by Hoffman-La Roche Inc., Nutley, N. J. It responds to every fire alarm sounded from any one of the 44 buildings on the pharmaceutical manufacturer's 100-acre tract.



Mounted on a C550 Ford chassis, it is equipped with a 250-gallon water tank, 30 gallons of foam, four Kidde 20-pound

carbon dioxide portables, four Kidde 30-pound dry chemical portables, four demand masks, an 8-foot collapsible ladder, and the usual complement of fire fighting and rescue tools.

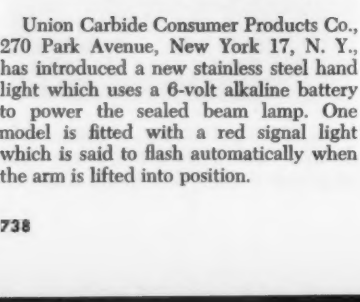
It mounts a Hale single-stage booster pump and 150 feet of ¾-inch high-pressure hose. The pump can also be used to boost pressure on a 2½-inch line.

Mounted on the truck are two Kidde 200-pound wheeled dry chemical units both equipped with 100 feet of hose. A unique ramp arrangement permits them to be rolled to the ground from their positions on the truck's rear deck.

Bostag Glass Blocksmasher

Boston Clip and Tag Co., 48 Grove Street, Somerville 44, Mass., has introduced a new power tool designed to quickly break out glass blocks used in building construction. Powered by a special tank of carbon dioxide, it is said to be easily carried on a man's back and operated with equal facility from a ladder or on the ground. The air gun which drives the Blocksmasher may also be fitted with accessory chisels and punches and used for cutting and chiseling metal, etc. Depending on the tool employed, the gas supply is said to last from 20 to 45 minutes.

New Eveready Hand Light



Union Carbide Consumer Products Co., 270 Park Avenue, New York 17, N. Y., has introduced a new stainless steel hand light which uses a 6-volt alkaline battery to power the sealed beam lamp. One model is fitted with a red signal light which is said to flash automatically when the arm is lifted into position.

Appointments and Promotions

W. Ben Flanigin has been promoted to vice president, The Gamewell Company, Newton Upper Falls, Mass., a subsidiary

of E. W. Bliss Company. He has been with Gamewell since his release from the U. S. Navy in 1946 and prior to his promotion was general sales manager.

Hugh J. Daly has been named vice president—Magnecord sales for Midwestern Instruments, 41st and Sheridan, Tulsa, Okla. He will be responsible for the sales and marketing program for the entire Magnecord product line manufactured by Midwestern Instruments in their Tulsa plant. Daly was formerly general sales manager for Magnecord.

Ormond M. Hessler has been appointed manager, Hood Branch Footwear Sales, B. F. Goodrich Footwear and Flooring Company, Watertown, Mass. He was formerly manager of industrial footwear and glove sales. **John L. Baier** has been appointed manager, industrial footwear and glove sales. He was formerly New England sales representative for industrial footwear and glove sales.

H. B. Stafford has been appointed director of Mine Safety Appliances Co.'s newly created cost appraisal program, and retains at the same time direction of the research and engineering activities of the Technical Products Division. He was formerly operations manager of that division. **C. M. Waugaman** has been named manager of materials control, with responsibility for purchasing, inventory control, production scheduling, traffic, and related activities. He was formerly superintendent of production control.

Indiana Truck Sales, 2207 Lincolnway West, Mishawaka, Ind., a division of Detroit Divco Truck Sales, has been opened as a new sales and service outlet. The new dealership will service Divco truck owners in the counties of LaPorte, Starke, Pulaski, Elkhart, Kosciusko, Steuben, Allen, Fulton, Marshall, St. Joseph, Whitley, Noble and LaGrange.

David L. Marx has been named marketing manager of the Synctron Division of Electro Powerpacs, Inc., Cambridge, Mass. A qualified expert in such diversified areas as electronics, lighting equipment, photography and first aid and rescue techniques, he has handled all first-aid treatment and training for the Boston Fire Department Auxilliary Service, responding to all multiple-alarm fires, plane crashes and train wrecks.

Frank S. Drake has been appointed director of marketing, Falcon Alarm Company, Inc., Summit, N. J. He replaces Charles P. Sagar, formerly vice president of Falcon, who has resigned from the firm to devote his time to other efforts in the marine field. Drake has previously been associated with the advertising department of the Colgate Palmolive Co., in New York City.

Holmes T. Collins has been appointed to the newly created post of manufacturing vice-president, Divco-Wayne Corporation, Detroit, Mich., it was announced by Newton Glekel, president.

Collins will maintain his offices at the Detroit plant, where he has been division manager since last year. He will coordinate and supervise production and manufacturing of Divco trucks, Wayne buses and Miller-Meteor ambulances.

Neil E. Shaffer has been named president of the recently reorganized American Fire Alarm Co., Inc., Portland, Ore.

Interested in property management and appraisal by occupation, he holds a B. A. degree in public and business administration and is a long-time member of the Kent City Council.

E. D. Bullard Co., Sausalito, Calif., and its distributors, have been appointed exclusive distributors of HI-VIZ safety paints to the safety industry. The paints are manufactured by the Fluorescent Product Div., Lawter Chemical Co.

Falcon Alarm Co., Summit, N. J., has been appointed exclusive distributors of air horns manufactured by the Clarke-Cooper Co., Palmyra, N. J.

BUYERS' GUIDE

Directory of Equipment For Fire Departments

This special feature is provided for the guidance and convenience of fire officials and others concerned with the purchase of fire equipment. The companies listed comprise those whose products have recently been advertised in FIRE ENGINEERING and are thus now actively serving the fire protection field. For information on any type of equipment not listed, address Readers' Service Dept., FIRE ENGINEERING, 466 Lexington Avenue, New York 17, N. Y.

Every effort is made to insure the completeness and accuracy of directory sections. However, this information is published as a service, and no guarantee against errors or omissions is expressed or inferred. Additions or corrections are invited at any time. Please address the publisher.

APPARATUS, MOTOR

APPARATUS

Ambulances

Automotive Conversion Corp.
Christopher Co., The
Clark's Fire Prevention Service
Fire Prevention Service
Ford Div., Fleet Sales Dept.
Gold Crest Safety Equipment Corp.
Hess & Eisenhardt Co.
International Harvester Co., Motor Truck Div.
Miller-Meteor Div., Divco-Wayne Corp.
Sharpsville Steel Fabricators, Inc.
Shop Of Siebert Associates, Inc.
Superior Coach Corp.

Chassis

Ford Div., Fleet Sales Dept.
FWD Corp.
GMC Truck & Coach Div., General Motors Corp.
International Harvester Co., Motor Truck Div.
Maxim Motor Co.
Pirsch, Peter, & Sons Co.
Ward La France Truck Corp.

Crash Trucks

American LaFrance, Div. Sterling Precision Corp.
Ansul Chemical Company
Bean, John, Div., Food Machinery & Chemical Corp.
Boardman Co., The
Central Fire Truck Corp.
Christopher Co., The
Darley, W. S., & Co.
Fire Trucks, Inc.
FWD Corp.
Gold Crest Safety Equipment Corp.
H. & H. Truck Tank Co., Inc.
Howe Fire Apparatus Co.
International Harvester Co., Motor Truck Div.
Kidde, Walter, & Co., Inc.
Maxim Motor Co.
Morysville Body Works, Inc.
Rockwood Sprinkler Div., Gamewell Company
Seagrave Corporation
Sharpsville Steel Fabricators, Inc.
Universal Fire Apparatus Corp.
Valley Fire Truck Co.
Ward La France Truck Corp.
Young Fire Equipment Corp.

Foam Trucks

American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Boardman Co., The
Central Fire Truck Corp.
Christopher Co., The
Darley, W. S., & Co.
FWD Corp.
H. & H. Truck Tank Co., Inc.
Howe Fire Apparatus Co.
International Harvester Co., Motor Truck Div.
Mack Trucks, Inc.
Maxim Motor Co.
National Foam System, Inc.
Rockwood Sprinkler Div., Gamewell Company
Seagrave Corporation
Sharpsville Steel Fabricators, Inc.
Universal Fire Apparatus Corp.
Ward La France Truck Corp.
Young Fire Equipment Corp.

Industrial Trucks (In Plant)

American LaFrance, Div. Sterling Precision Corp.
Ansul Chemical Company
Bean, John, Div., Food Machinery & Chemical Corp. (Self-Propelled & Stationary)
Brumbaugh Body Co., Inc.
Central Fire Truck Corp.
Christopher Co., The
Darley, W. S., & Co.
Howe Fire Apparatus Co.
Sharpsville Steel Fabricators, Inc.
Universal Fire Apparatus Corp.
Valley Fire Truck Co.
Ward La France Truck Corp.
Young Fire Equipment Corp.

Ladder Trucks, Aerial

American Fire Apparatus Co.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Brumbaugh Body Co., Inc.
Central Fire Truck Corp.
Darley, W. S. & Co.
FWD Corp.
Howe Fire Apparatus Co.
International Harvester Co., Motor Truck Div.
Mack Trucks, Inc.
Maxim Motor Co.
Memco Aerial Ladder Co.
Pirsch, Peter, & Sons Co.
Seagrave Corporation
Sharpsville Steel Fabricators, Inc.
Snorkel Fire Equipment Co.
Universal Fire Apparatus Corp.
Young Fire Equipment Corp.

Ladder Trucks, Service

American Fire Apparatus Co.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Brumbaugh Body Co., Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fire Trucks, Inc.
FWD Corp.
H. & H. Truck Tank Co., Inc.
Howe Fire Apparatus Co.
International Harvester Co., Motor Truck Div.
Mack Trucks, Inc.
Maxim Motor Co.
Pirsch, Peter, & Sons Co.
Seagrave Corporation
Sharpsville Steel Fabricators, Inc.
Universal Fire Apparatus Corp.
Valley Fire Truck Co.
Young Fire Equipment Corp.

Pumpers And Hose Cars

American Fire Apparatus Co.
American LaFrance, Div. Sterling Precision Corp.
Ansul Chemical Company
Bean, John, Div., Food Machinery & Chemical Corp.
Boardman Co., The
Brumbaugh Body Co., Inc.
Central Fire Truck Corp.
Christopher Co., The
Clark's Fire Prevention Service
Darley, W. S., & Co.
Fire Trucks, Inc.
FWD Corp.
Gerstenslager Co., The
Gold Crest Safety Equipment Corp.
H. & H. Truck Tank Co., Inc.
Halprin Supply Co.
Howe Fire Apparatus Co.
Mack Trucks, Inc.
Maxim Motor Co.
National Foam System, Inc.
Pirsch, Peter, & Sons Co.
Seagrave Corporation
Sharpsville Steel Fabricators, Inc.
Universal Fire Apparatus Corp.
Valley Fire Truck Co.
Ward La France Truck Corp.
Young Fire Equipment Corp.

Pumpers, High Pressure Fog

American Fire Apparatus Co.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Boardman Co., The
Brumbaugh Body Co., Inc.
Central Fire Truck Corp.
Clark's Fire Prevention Service
Darley, W. S., & Co.
Fire Trucks, Inc.
FWD Corp.
H. & H. Truck Tank Co., Inc.
Halprin Supply Co.
Howe Fire Apparatus Co.
International Harvester Co., Motor Truck Div.
Mack Trucks, Inc.
Maxim Motor Co.
Pirsch, Peter, & Sons Co.
Seagrave Corporation
Sharpsville Steel Fabricators, Inc.
Universal Fire Apparatus Corp.
Ward La France Truck Corp.
Young Fire Equipment Corp.

Rescue and Squad Trucks

American Fire Apparatus Co.
American LaFrance, Div. Sterling Precision Corp.
Automotive Conversion Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Boardman Co., The
Brumbaugh Body Co., Inc.
Central Fire Truck Corp.
Christopher Co., The
Clark's Fire Prevention Service
Darley, W. S., & Co.
Divco Truck Div., Divco-Wayne Corp.
Fire Prevention Service
Fire Trucks, Inc.
FWD Corp.
Gerstenslager Co., The
Gold Crest Safety Equipment Corp.
H. & H. Truck Tank Co., Inc.
Hess & Eisenhardt Co.
Howe Fire Apparatus Co.
International Harvester Co., Motor Truck Div.
Mack Trucks, Inc.
Maxim Motor Co.
Miller-Metror Div., Divco-Wayne Corp.
Morysville Body Works, Inc.
Pirsch, Peter, & Sons Co.
Seagrave Corporation
Sharpsville Steel Fabricators, Inc.
Universal Fire Apparatus Corp.
Ward La France Truck Corp.
Young Fire Equipment Corp.

Tank Trucks

American Fire Apparatus Co.
American LaFrance, Div. Sterling Precision Corp.
Baughman Mfg. Co.
Bean, John, Div., Food Machinery & Chemical Corp.
Boardman Co., The
Brumbaugh Body Co., Inc.
Central Fire Truck Corp.
Christopher Co., The
Darley, W. S., & Co.
Fire Trucks, Inc.
FWD Corp.
Gold Crest Safety Equipment Corp.
H. & H. Truck Tank Co., Inc.
Howe Fire Apparatus Co.
International Harvester Co., Motor Truck Div.
Mack Trucks, Inc.
Maxim Motor Co.
Morysville Body Works, Inc.
National Foam System, Inc.
Pirsch, Peter, & Sons Co.
Sharpsville Steel Fabricators, Inc.
Universal Fire Apparatus Corp.
Ward La France Truck Corp.
Young Fire Equipment Corp.

Towers, Hydraulic

Brumbaugh Body Co., Inc.
Central Fire Truck Corp.
FWD Corp.
International Harvester Co., Motor Truck Div.
Mobile Aerial Towers, Inc.
Pirsch, Peter, & Sons Co.
Snorkel Fire Equipment Co.
Young Fire Equipment Corp.

Utility and Repair Trucks

Brumbaugh Body Co., Inc.
FWD Corp.
H. & H. Truck Tank Co., Inc.
International Harvester Co., Motor Truck Div.
Morysville Body Works, Inc.

ALTERNATORS, AUTOMOTIVE

Central Fire Truck Corp.
Darley, W. S., & Co.
Delco-Remy Div., General Motors Corp.
Electric Autolite Co.
Ford Div., Fleet Sales Dept.
Leece-Neville Co., The

BATTERIES APPARATUS

Central Fire Truck Corp.
Darley, W. S., & Co.
Delco-Remy Div., General Motors Corp.
Electric Autolite Co.
Ford Div., Fleet Sales Dept.
Sonotone Corp.

BATTERY CHARGERS

Darley, W. S., & Co.
Electric Autolite Co.
Onan, D. W., & Sons, Inc.
Russell Fire Equipment, Div. Russell Uniform Co.
Sonotone Corp.

BRAKE LOCK, HYDRAULIC

Central Fire Truck Corp.

ENGINES (Diesel or Gas)

American LaFrance, Div. Sterling Precision Corp.
Ford Div., Fleet Sales Dept.
GMC Truck & Coach Div., General Motors Corp.
Hercules Motors Corp.
Waukesha Motor Company

GENERATORS, AUTOMOTIVE

Delco-Remy Div., General Motors Corp.
Electric Autolite Co.
Leece-Neville Co., The

HARDWARE FOR APPARATUS

American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Universal Fire Apparatus Corp.

IGNITION SHIELDING

Hallett Mfg. Co.

IGNITION SYSTEMS

Delco-Remy Div., General Motors Corp.

LADDERS, AERIAL

American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Brumbaugh Body Co., Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
FWD Corp.
Maxim Motor Co.
Memco Aerial Ladder Co.
Pirsch, Peter, & Sons Co.
Snorkel Fire Equipment Co.

POWER STEERING, HYDRAULIC

Garrison Mfg. Co., Inc.

SEAT BELTS

Bullard, E. D., Co.
Ford Div., Fleet Sales Dept.
Rupert Parachute Co.

SIGNS & EMBLEMS, APPARATUS

Clark's Fire Prevention Service
Darley, W. S., & Co.
Electric Autolite Co.
Everson-Ross Co., Inc.
F D Products
Gold Crest Safety Equipment Corp.
Greenberg's, M., Sons
Halprin Supply Co.
Maxim Motor Co.
Pacific Reflex Signs
Russell Fire Equipment, Div. Russell Uniform Co.
Universal Fire Apparatus Corp.
Wentworth-Forman Co., Inc.

TRANSMISSIONS

Fuller Mfg. Co.

WARNING DEVICES, APPARATUS

Bells

American LaFrance, Div. Sterling Precision Corp.
Autocall Co.
Bean, John, Div., Food Machinery & Chemical Corp.
Bullard, E. D., Co.
Central Fire Truck Corp.
Darley, W. S., & Co.
Greenberg's, M., Sons
Halprin Supply Co.
Morysville Body Works, Inc.
Safa Alarm Div., Inc., Fyr-Fyter Co., The
Young Fire Equipment Corp.

Flashers

Autocall Co.
Automotive Conversion Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Carpenter Manufacturing Co.
Central Fire Truck Corp.
Darley, W. S., & Co.
Dietz, R. E., Co.
Macchi & Company
Machine Products Corp.
McDermott, Julian, A., Corp.
Morysville Body Works, Inc.
Russell Fire Equipment, Div. Russell Uniform Co.
Sterling Siren Fire Alarm Co., Inc.
Trippe Mfg. Co.
Whelen Engineering Co., Inc.

Lights

American LaFrance, Div. Sterling Precision Corp.
Automotive Conversion Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Carpenter Manufacturing Co.
Central Fire Truck Corp.
Darley, W. S., & Co.
Dietz, R. E., Co.
Electric Autolite Co.
Federal Sign & Signal Corp.
Fyr-Fyter Co., The
Halprin Supply Co.
Machine Products Corp.
McDermott, Julian, A., Corp.
Morysville Body Works, Inc.
Russell Fire Equipment, Div. Russell Uniform Co.
Safa Alarm Div., Inc., Fyr-Fyter Co., The
Trippe Mfg. Co.
Whelen Engineering Co., Inc.

Sirens

American LaFrance, Div. Sterling Precision Corp.
Antrex Corp.
Autocall Co.
Automotive Conversion Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Camcone Products, Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Federal Sign & Signal Corp.
Fyr-Fyter Co., The
Grover Products Co.
Halprin Supply Co.
Lawrence, Inc.
Macchi & Co. (Flashers for Sirens)
Morysville Body Works, Inc.
Russell Fire Equipment, Div. Russell Uniform Co.
Safa Alarm Div., Inc., Fyr-Fyter Co., The
Sterling Siren Fire Alarm Co., Inc.

Whistles

Autocall Co.
Darley, W. S., & Co.
Falcon Alarm Co., Inc.
Morysville Body Works, Inc.
Safa Alarm Div., Inc., Fyr-Fyter Co., The

BOATS, FIRE

BOATS

Pacific Marine Supply Co.

ENGINES, DIESEL OR GAS

Pacific Marine Supply Co.
Waukesha Motor Company

OUTBOARD MOTORS

Pacific Marine Supply Co.

CLOTHING

CLOTHING, PROTECTIVE

Aluminized, Insulated

American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Cairns & Bro., Inc.
Darley, W. S., & Co.
Fyrepel Products, Inc.
Globe Manufacturing Co.
Halprin Supply Co.
Janesville Apparel Co.
Midwestern Safety Mfg. Co.
Mine Safety Appliances Company
Minnesota Mining & Mfg. Co. (Fabrics)
Morning Pride Mfg. Co.
Russell Fire Equipment, Div. Russell Uniform Co.
Wheeler Protective Apparel, Inc.

Asbestos

American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Cairns & Bro., Inc.
Darley, W. S., & Co.
Halprin Supply Co.
Mine Safety Appliances Company
Russell Fire Equipment, Div. Russell Uniform Co.
Wheeler Protective Apparel, Inc.

Belts and Suspenders

Alb Rubber Co.
American LaFrance, Div. Sterling Precision Corp.
Cairns & Bro., Inc.
Darley, W. S., & Co.
Globe Manufacturing Co.
Janesville Apparel Co.
Midwestern Safety Mfg. Co.
Morning Pride Mfg. Co.

Boot Calks

Norlund, O. A., Co.

Boots

American LaFrance, Div. Sterling Precision Corp.
Beacon Falls Rubber Footwear
Bean, John, Div., Food Machinery & Chemical Corp.
Cairns & Bro., Inc.
Darley, W. S., & Co.
Eureka Fire Hose Div., U. S. Rubber Co.
Fyrepel Products, Inc.
Fyr-Fyter Co., The
Goodall Rubber Co.
Goodrich, B. F., Footwear & Flooring Co.
Halprin Supply Co.
Janesville Apparel Co.
Midwestern Safety Mfg. Co.
Mine Safety Appliances Company
Russell Fire Equipment, Div. Russell Uniform Co.
Wheeler Protective Apparel, Inc.

Gloves

Cairns & Bro., Inc.
Darley, W. S., & Co.
Fyrepel Products, Inc.
Fyr-Fyter Co., The
Globe Manufacturing Co.
Goodrich, B. F., Footwear & Flooring Co.
Halprin Supply Co.
Midwestern Safety Mfg. Co.
Mine Safety Appliances Company
Morning Pride Mfg. Co.
Wheeler Protective Apparel, Inc.

Goggles

Bullard, E. D., Co.
Cairns & Bro., Inc.
Darley, W. S., & Co.
Mine Safety Appliances Company

Hats

Bullard, E. D., Co.
Cairns & Bro., Inc.
Darley, W. S., & Co.
Globe Manufacturing Co.
Goodall Rubber Co.
Halprin Supply Co.
Midwestern Safety Mfg. Co.
Mine Safety Appliances Company
Reese, S. H.
Russell Fire Equipment, Div. Russell Uniform Co.

Helmets
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Bullard, E. D., Co.
Cairns & Bro., Inc.
Darley, W. S., & Co.
Fyrepel Products, Inc.
Fyr-Fyter Co., The
Halprin Supply Co.
Midwestern Safety Mfg. Co.
Mine Safety Appliances Company
Russell Fire Equipment, Div. Russell Uniform Co.
Wheeler Protective Apparel, Inc.

Innersoles
American LaFrance, Div. Sterling Precision Corp.
Cairns, & Bro., Inc.
Darley, W. S., & Co.
Goodall Rubber Co.
Halprin Supply Co.
Janesville Apparel Co.
Russell Fire Equipment, Div. Russell Uniform Co.

Rubber & Canvas Coats
Alb Rubber Co.
American LaFrance, Div. Sterling Precision Corp.
Beacon Falls Rubber Footwear
Bean, John, Div., Food Machinery & Chemical Corp.
Body Guard Mfg. Co.
Cairns & Bro., Inc.
Darley, W. S., & Co.
Eureka Fire Hose Div., U. S. Rubber Co. (rubber)
Globe Manufacturing Co.
Goodall Rubber Co.
Goodrich, B. F., Industrial Products Co., Div. B. F. Goodrich Co.
Halprin Supply Co.
Janesville Apparel Co.
Midwestern Safety Mfg. Co.
Morning Pride Mfg. Co.
Russell Fire Equipment, Div. Russell Uniform Co.

Suits, Quick Hitch
Alb Rubber Co.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Body Guard Mfg. Co.
Cairns & Bro., Inc.
Darley, W. S., & Co.
Fyr-Fyter Co., The
Globe Manufacturing Co.
Halprin Supply Co.
Janesville Apparel Co.
Midwestern Safety Mfg. Co.
Morning Pride Mfg. Co.

MATERIAL (UNIFORM)
Russell Fire Equipment, Div. Russell Uniform Co.

WEARING APPAREL, DRESS

Hats and Caps, Uniform
Cairns & Bro., Inc.
Darley, W. S., & Co.
Halprin Supply Co.
Reese, S. H. (Caps)
Russell Fire Equipment, Div. Russell Uniform Co.
Wentworth-Forman Co., Inc.

Shirts, Uniform
Darley, W. S., & Co.
Leventhal Bros. & Co., Inc.
Russell Fire Equipment, Div. Russell Uniform Co.

Uniforms
Darley, W. S., & Co.
Russell Fire Equipment, Div. Russell Uniform Co.

Woolen Socks and Mitts
Cairns, & Bro., Inc.
Darley, W. S., & Co.

COMMUNICATIONS

ALARM SYSTEMS

Alerting
Antrex Corp.
Darley, W. S., & Co.
Electronics Div., Hobby Enterprises, Inc.
Falcon Alarm Co., Inc.
Federal Sign & Signal Corp.
Gamewell Company
Hobby Enterprises, Inc.
Lawrence, Inc.
Plectron Corp.
Safa Alarm Div., Inc., Fyr-Fyter Co., The
Scott Aviation Corp.
Trippe Mfg. Co.

Automatic
American District Telegraph Co.
Autocall Co.
Darley, W. S., & Co.
Falcon Alarm Co., Inc.
Fyr-Fyter Co., The
Gamewell Company
Grinnell Co., Inc.
Halprin Supply Co.
Harrington Signal Co.
Kidde, Walter, & Co., Inc.
Safa Alarm Div., Fyr-Fyter Co., The

Batteries
Electric Autolite Co.
Gamewell Company
Harrington Signal Co.
Pacific Marine Supply Co.
Safa Alarm Div., Inc., Fyr-Fyter Co., The
Sonotone Corp.

Boxes
Autocall Co.
Darley, W. S., & Co.
Fyr-Fyter Co., The
Gamewell Company
Harrington Signal Co.
Safa Alarm Div., Inc., Fyr-Fyter Co., The

Cable
Electric Autolite Co.
Gamewell Company
Safa Alarm Div., Inc., Fyr-Fyter Co., The

Central Station
American District Telegraph Co.
Federal Sign & Signal Corp.
Fyr-Fyter Co., The
Gamewell Company
Safa Alarm Div., Inc., Fyr-Fyter Co., The

Home
Falcon Alarm Co., Inc.
Gamewell Company
Halprin Supply Co.
Holiday Co.
Kidde Ultrasonic & Detection Alarms, Inc., Subs. Walter Kidde & Co., Inc.
Safa Alarm Div., Inc., Fyr-Fyter Co., The

Industrial
American District Telegraph Co.
Autocall Co.
Darley, W. S., & Co.
Falcon Alarm Co., Inc.
Federal Sign & Signal Corp.
Fyr-Fyter Co., The
Gamewell Company
Halprin Supply Co.
Harrington Signal Co.
Kidde Ultrasonic & Detection Alarms, Inc., Subs. Walter Kidde & Co., Inc.
Safa Alarm Div., Inc., Fyr-Fyter Co., The

Institutional
American District Telegraph Co.
Autocall Co.
Darley, W. S., & Co.
Falcon Alarm Co., Inc.
Federal Sign & Signal Corp.
Fyr-Fyter Co., The
Gamewell Company
Halprin Supply Co
Harrington Signal Co.
Kidde Ultrasonic & Detection Alarms, Inc., Subs. Walter Kidde & Co., Inc.
Safa Alarm Div., Inc., Fyr-Fyter Co., The

Municipal
Darley, W. S., & Co.
Falcon Alarm Co., Inc.
Federal Sign & Signal Corp.
Fyr-Fyter Co., The
Gamewell Company
General Railway Signal Co., Electronic Control Div.
Harrington Signal Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Safa Alarm Div., Inc., Fyr-Fyter Co., The

Radio
Antrex Corp.
Electronics Div., Hobby Enterprises, Inc.
Harron Labs
Hobby Enterprises, Inc.
Plectron Corp.

Recording Systems
Antrex Corp.
Gamewell Company
Harrington Signal Co.
Safa Alarm Div., Inc., Fyr-Fyter Co., The

Reels, Cable (Portable)
Industrial Electrical Works

Sirens, Air Horns, Whistles & Coders
American LaFrance, Div. Sterling Precision Corp.
Antrex Corp.
Camcone Products, Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Falcon Alarm Co., Inc.
Federal Sign & Signal Corp.
Fyr-Fyter Co., The
Gamewell Company
Halprin Supply Co.
Lawrence, Inc.
Morysville Body Works, Inc.
Russell Fire Equipment, Div. Russell Uniform Co.
Safa Alarm Div., Inc., Fyr-Fyter Co., The
Sterling Siren Fire Alarm Co., Inc.
University Loudspeakers, Inc.

Smoke
American District Telegraph Co.
Fyr-Fyter Co., The
Gamewell Company
Halprin Supply Co.
Kidde, Walter, & Co., Inc.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Safa Alarm Div., Inc., Fyr-Fyter Co., The

Tape Systems
Antrex Corp.
Boston Clip & Tag Co.
Gamewell Company
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Safa Alarm Div., Inc., Fyr-Fyter Co., The

Watch Tour Systems
American District Telegraph Co.
Gamewell Company

LOUD SPEAKERS

Electronic Megaphones
Antrex Corp.
Audio Equipment Co., Inc.
Darley, W. S., & Co.
Falcon Alarm Co., Inc.
Halprin Supply Co.
Lawrence, Inc.
Morysville Body Works, Inc.
Russell Fire Equipment, Div. Russell Uniform Co.
University Loudspeakers Inc.
Wheeler Protective Apparel, Inc.
Young Fire Equipment Corp.

Public Address Systems
Antrex Corp.
Audio Equipment Co., Inc. (Portable)
Du Mont, Allen B., Laboratories, Inc.
Federal Sign & Signal Corp.
Fyr-Fyter Co., The
Lawrence, Inc.
Morysville Body Works, Inc.
Russell Fire Equipment, Div. Russell Uniform Co.
Safa Alarm Div., Inc., Fyr-Fyter Co., The
University Loudspeakers Inc.
Wheeler Protective Apparel, Inc.

RADIO

Interference Shielding
Hallett Mfg. Co.

Mobile and Station
Antrex Corp.
Du Mont, Allen B., Laboratories, Inc.
General Electric Co., Communication Products Dept.
Gonset Div., Young Spring & Wire Corp.
Harron Labs
Motorola Communications & Electronics, Inc.

Portable
Antrex Corp.
Du Mont, Allen B., Laboratories, Inc.
General Electric Co., Communication Products Dept.
Motorola Communications & Electronics, Inc.

Receivers
Antrex Corp. (Helmet Receivers)
Darley, W. S., & Co.
Du Mont, Allen B., Laboratories, Inc.
Electronics Div., Hobby Enterprises, Inc.
General Electric Co., Communication Products Dept.
Harron Labs
Motorola Communications & Electronics, Inc.
Plectron Corp.

TELEPHONE-EMERGENCY

Antrex Corp.
Gamewell Company
Harrington Signal Co.

TRAFFIC CONTROL EQUIPMENT

Antrex Corp.
Clark's Fire Prevention Service
Darley, W. S., & Co.
McDermott, Julian, A., Corp.
Motorola Communications & Electronics, Inc.
Trippe Mfg. Co.
Whelen Engineering Co., Inc.

EXTINGUISHERS

EXTINGUISHERS

Carbon Dioxide

American LaFrance, Div. Sterling Precision Corp.
Ansul Chemical Company
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fire Prevention Service
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Kidde, Walter, & Co., Inc.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Pyrene C-O-Two Div., Fyr-Fyter Co., The
Russell Fire Equipment, Div. Russell Uniform Co.

Chimney Fire

American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Fire Prevention Service
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Pacific Marine Supply Co.

Dry Chemical

Alim Corp.
American LaFrance, Div. Sterling Precision Corp.
Ansul Chemical Company
Bean, John, Div., Food Machinery & Chemical Corp.
Darley, W. S., & Co.
Fire Prevention Service
Ford Div., Fleet Sales Dept.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Kidde, Walter, & Co., Inc.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Fire Equipment, Div. Russell Uniform Co.

Foam

American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Fire Prevention Service
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Kidde, Walter, & Co., Inc.
National Foam System, Inc.
Pacific Marine Supply Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Rockwood Sprinkler Div., Gamewell Company
Russell Fire Equipment, Div. Russell Uniform Co.

Metal, Fire

American LaFrance, Div. Sterling Precision Corp.
Ansul Chemical Company
Bean, John, Div., Food Machinery & Chemical Corp.
Darley, W. S., & Co.
Fire Prevention Service
Howe Fire Apparatus Co.
Pacific Marine Supply Co.
Russell Fire Equipment, Div. Russell Uniform Co.

Pressurized Water

American LaFrance, Div. Sterling Precision Corp.
Ansul Chemical Company
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Champion Sprayer Co.
Darley, W. S., & Co.
Fire Prevention Service
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Kidde, Walter, & Co., Inc.
Pacific Marine Supply Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Fire Equipment, Div. Russell Uniform Co.

Soda & Acid

American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Darley, W. S., & Co., Inc.
Fire Prevention Service
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Kidde, Walter, & Co., Inc.
Morysville Body Works, Inc.
National Foam System, Inc.
Pacific Marine Supply Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Fire Equipment, Div. Russell Uniform Co.

Vaporizing Liquid

American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Firetox System, Inc.
Fire Prevention Service
Ford Div., Fleet Sales Dept.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Kidde, Walter, & Co., Inc.
Pacific Marine Supply Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Fire Equipment, Div. Russell Uniform Co.

Water

American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fire Prevention Service
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Kidde, Walter, & Co., Inc.
Pacific Marine Supply Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Fire Equipment, Div. Russell Uniform Co.
Smith, D. B., & Co., Inc.

EXTINGUISHING SYSTEMS

Automatic Sprinkler Supervision

American District Telegraph Co.
Grinnell Co., Inc.
Harrington Signal Co.
Pacific Marine Supply Co.
Rockwood Sprinkler Div., Gamewell Company

Carbon Dioxide

American LaFrance, Div. Sterling Precision Corp.
Fyr-Fyter Co., The
Grinnell Co., Inc
Halprin Supply Co.
Kidde, Walter, & Co., Inc.
Pacific Marine Supply Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The

Dry Chemical

Ansul Chemical Company
Fyr-Fyter Co., The
Grinnell Co., Inc.
Pacific Marine Supply Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The

Foam

American LaFrance, Div. Sterling Precision Corp.
Fyr-Fyter Co., The
Grinnell Co., Inc.
Halprin Supply Co.
National Foam System, Inc.
Pacific Marine Supply Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Rockwood Sprinkler Div., Gamewell Company

Foam Towers

National Foam System, Inc.

Water (Sprinkler)

Fyr-Fyter Co., The
Greenberg's, M., Sons
Grinnell Co., Inc.
Pacific Marine Supply Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Rockwood Sprinkler Div., Gamewell Company

Other

American District Telegraph Co.
Ansul Chemical Company
Firetox System, Inc.
Russell Fire Equipment, Div. Russell Uniform Co.

EXTINGUISHING AGENTS

Foam-Chemical-Liquid

Akron Brass Mfg. Co., Inc.
Alim Corp.
American LaFrance, Div. Sterling Precision Corp.
Ansul Chemical Company
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fyr-Fyter Co., The
Halprin Supply Co.
National Foam System, Inc.
Pacific Marine Supply Co.
Peters, A. K., Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Rockwood Sprinkler Div., Gamewell Company
Russell Fire Equipment, Div. Russell Uniform Co.

Metal, Fire

American LaFrance, Div. Sterling Precision Corp.
Alim Corp.
Ansul Chemical Company
Bean, John, Div., Food Machinery & Chemical Corp.
Pacific Marine Supply Co.

Wetting Agents

Akron Brass Mfg. Co., Inc. (Unox)
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fyr-Fyter Co., The
Halprin Supply Co.
National Foam System, Inc.
Rockwood Sprinkler Div., Gamewell Company
Russell Fire Equipment, Div. Russell Uniform Co.
Stevens, S. G. Co.

FIRE DEPARTMENT APPLIANCES & SUPPLIES

BADGES, INSIGNIA, ETC.

American LaFrance, Div. Sterling Precision Corp.
Blackinton, V. H., & Co., Inc.
Braxmar, C. G., Co., Inc., The
Bullard, E. D., Co.
Cairns & Bro., Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Everson-Ross Co., Inc.
Fyr-Fyter Co., The
Halprin Supply Co.
Reese, S. H.
Russell Fire Equipment, Div. Russell Uniform Co.
Wentworth-Forman Co., Inc.

BLANKETS, FIRE

American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Bullard, E. D., Co.
Darley, W. S., & Co.
Fulton Cotton Mills
Fyrepel Products, Inc. (Aluminized, Insulated)
Fyr-Fyter Co., The
Halperin, A. E., Co., Inc.
Halprin Supply Co.
Mine Safety Appliances Company
Russell Fire Equipment, Div. Russell Uniform Co.
Wheeler Protective Apparel, Inc.

BROOMS, FIRE FIGHTING

American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Darley, W. S., & Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Mason-Worcester Brush Co.
Russell Fire Equipment, Div. Russell Uniform Co.

BROOMS, SAFETY, NON SPARKING

Bean, John, Div., Food Machinery & Chemical Corp.
Darley, W. S., & Co.

EJECTORS AND EXHAUSTERS, SMOKE

American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Mountain States Equipment Co.
Russell Fire Equipment, Div. Russell Uniform Co.
Super Vacuum Mfg Co., Inc.

FIRE ESCAPES

Permanent
American LaFrance, Div. Sterling Precision Corp.
Marryatt, Lane & Co., Inc.
Potter Fire Escape Co.

Portable
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Marryatt, Lane & Co., Inc.

FOAM GENERATORS OR PUMPS
Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fyr-Fyter Co., The
Hale Fire Pump Co.
Halprin Supply Co.
National Foam System, Inc.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Fire Equipment, Div. Russell Uniform Co.
Universal Fire Apparatus Corp.

FOAM, TRAILER
Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
National Foam System, Inc.
Rockwood Sprinkler Div., Gamewell Company
Universal Fire Apparatus Corp.

FUND RAISING DEVICES
Coin Savers
Handford-Brown Co., Inc.
Hofert, J., Co.
Holiday Co.

GAS DETECTORS
Flamort Chemical Co.
Houston Instrument Corp.
Mine Safety Appliances Company

GAUGES

Brake Line, Pressure
Electric Autolite Co.

Compound
Central Fire Truck Corp.
Darley, W. S., & Co.
Halprin Supply Co.
Universal Fire Apparatus Corp.

Computers, Pressure
Akron Brass Mfg. Co., Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.

Piezometers
Akron Brass Mfg. Co., Inc
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Halprin Supply Co.
Universal Fire Apparatus Corp.
Wooster Brass Products, Fyr-Fyter Co., The

Pressure
Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Halprin Supply Co.
Universal Fire Apparatus Corp.

Testing
Akron Brass Mfg. Co., Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Halprin Supply Co.
Universal Fire Apparatus Corp.

GENERAL FIRE DEPT. SUPPLIES
Akron Brass Mfg. Co., Inc.
Cairns & Bro., Inc.
Central Fire Truck Corp.
Clark's Fire Prevention Service
Fyr-Fyter Co., The
Halprin Supply Co.
Sargent-Sowell, Inc.
Universal Fire Apparatus Corp.
Young Fire Equipment Corp.

HEAT SHIELD
American LaFrance, Div. Sterling Precision Corp.
Fyrepel Products, Inc.
National Foam System, Inc.
Russell Fire Equipment, Div. Russell Uniform Co.

LADDERS

Fiberglass
Aluminum Ladder Co.
Marryatt, Lane & Co., Inc.
Pirsch, Peter, & Sons Co.

Metal
Aluminum Ladder Co. (Aluminum)
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Duo-Safety Ladder Corp. (Aluminum)
Fyr-Fyter Co., The
Grove Mfg. Co.
Halprin Supply Co.
Marryatt, Lane & Co., Inc.
Pirsch, Peter, & Sons Co. (Aluminum)
Russell Fire Equipment, Div. Russell Uniform Co.

Rope
Bean, John, Div., Food Machinery & Chemical Corp.
Darley, W. S., & Co.
Halprin Supply Co.
Marryatt, Lane & Co., Inc.

Wood
Aluminum Ladder Co.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Duo-Safety Ladder Corp.
Fyr-Fyter Co., The
Halprin Supply Co.
Maxim Motor Co.
Pirsch, Peter, & Sons Co.

LIFE BELTS
American LaFrance, Div. Sterling Precision Corp.
Atlas Safety Equipment Co., Inc.
Bean, John, Div., Food Machinery & Chemical Corp.
Cairns, & Bro., Inc.
Darley, W. S., Inc.
Fyr-Fyter Co., The
Halprin Supply Co.
Russell Fire Equipment, Div. Russell Uniform Co.

LIFE GUNS
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Halprin Supply Co.
Pacific Marine Supply Co.

NETS, LIFE AND TRAINING
American LaFrance, Div. Sterling Precision Corp.
Atlas Safety Equipment Company, Inc.
Bean, John, Div., Food Machinery & Chemical Corp.
Bullard, E. D., Co.
Darley, W. S., & Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Marryatt, Lane & Co., Inc.
Russell Fire Equipment, Div. Russell Uniform Co.

PHOTOGRAPHIC EQUIPMENT
Darley, W. S., & Co.

PRESENTATION GIFTS
Cairns, & Bro., Inc.

PROPORTIONERS AND EDUCTORS WET WATER AND FOAM
Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Hale Fire Pump Co. (Foam)
Halprin Supply Co.
National Foam System, Inc.
Rockwood Sprinkler Div., Gamewell Company
Russell Fire Equipment, Div. Russell Uniform Co.

RADIATION METERS
Controls for Radiation, Inc.

RECORD BOOKS, DEPARTMENT
Cairns & Bro., Inc.
Darley, W. S., & Co.

REFLECTIVE SIGNS AND MATERIALS
Clark's Fire Prevention Service
Darley, W. S., & Co.
Electric Autolite Co.
Flex-O-Lite Mfg. Corp.
F D Products
Lawter Chemicals, Inc.
Mine Safety Appliances Co.
Pacific Reflex Signs

RESCUE ALARM
Rescue Alarm Co.

RUST PREVENTATIVES
Dakota Chemical Co.
Darley, W. S., & Co.
Penetone Co.

SALVAGE COVERS
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Cairns, & Bro., Inc.
Canvas Products Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fulton Cotton Mills
Fyrepel Products, Inc.
Fyr-Fyter Co., The
Halprin Supply Co.
Russell Fire Equipment, Div. Russell Uniform Co.
Wheeler Protective Apparel, Inc.

SEARCH AND RESCUE EQUIPMENT
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Fyrepel Products, Inc.
Halprin Supply Co.
McDermott, Julian, A., Corp.
Mine Safety Appliances Co.
Porter, H. K., Inc.
Rockwood Sprinkler Div., Gamewell Company
Russell Fire Equipment, Div. Russell Uniform Co.

SLIDING POLES, FIRE STATION
Greenberg's, M., Sons
McIntire, F. N., Brass Works, Inc.

SMOKE & ODOR REMOVERS
American LaFrance, Div. Sterling Precision Corp.
Halprin Supply Co.
Mountain States Equipment Co.
Russell Fire Equipment, Div. Russell Uniform Co.
Super Vacuum Mfg. Co., Inc.

SMOKE BOMBS
Acme Protection Equipment Co.
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Halprin Supply Co.
Superior Signal Co., Inc.

TEXTBOOKS
Darley, W. S., & Co.
Long's College Book

THAWING EQUIPMENT, HYDRANT
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.

THREAD CUTTING EQUIPMENT
Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Halprin Supply Corp.
Wooster Brass Products, Fyr-Fyter Co., The

TRAINING AIDS
Antrex Corp.
Delehanty Correspondence School
Investigations Institute
Medical Supply Co.
Rockwood Sprinkler Div., Gamewell Company

TRAINING TOWERS
Atlas Safety Equipment Co., Inc.

TROPHIES & PLAQUES
Blackinton, V. H., & Co., Inc.
Greenberg's, M., Sons
International Bronze Tablet Co., Inc.

VENTILATING EQUIPMENT
Akron Brass Mfg. Co., Inc.
Darley, W. S., & Co.
Halprin Supply Co.
Mine Safety Appliances Company
Mountain States Equipment Co.
Super Vacuum Mfg. Co., Inc.

WATER TANKS, PORTABLE CANVAS
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Canvas Products Corp.
Central Fire Truck Corp.

Water Tanks, Portable Canvas (Continued)

Darley, W. S., & Co.
Fol-Da-Tank Co.
Halprin Supply Co.
Pacific Marine Supply Co.

FIRE PREVENTION

CHIMNEY BRUSHES

Darley, W. S., & Co.
Mason-Worcester Brush Co.

FIRE RETARDANT MATERIALS

Paint, etc.

Alim Corp.
Flamort Chemical Co.
Gamewell Company
Goodrich, B. F., Footwear & Flooring Co.

Petroleum Emulsifiers

Penetone Co.

PANIC EXIT DEVICES

Vonnegut Hardware Co., Von Duprin Div.

SAFETY EQUIPMENT FOR FLAMMABLE LIQUIDS

American LaFrance, Div. Sterling Precision Corp.
Fyrepel Products, Inc.
Halprin Supply Co.

FIRST AID EQUIPMENT

AMBULANCE COTS

Automotive Conversion Corp.
Darley, W. S., & Co.
Halprin Supply Co.
Medical Supply Co.
Russell Fire Equipment, Div. Russell Uniform Co.
Superior Coach Corp.
Washington Products Co.

BURN TREATMENT

Bullard, E. D., Co.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Halperin, A. E., Co., Inc.
Halprin Supply Co.
Medical Supply Co.
Pac-Kit Safety Equipment Co., Inc.
Russell Fire Equipment, Div. Russell Uniform Co.

FIRST AID KITS

American LaFrance, Div. Sterling Precision Corp.
Automotive Conversion Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Bullard, E. D., Co.
Clark's Fire Prevention Service
Darley, W. S., & Co.
Fyr-Fyter Co., The
Halperin, A. E., Co., Inc.
Halprin Supply Co.
Medical Supply Co.
Mine Safety Appliances Company
Pac-Kit Safety Equipment Co., Inc.
Russell Fire Equipment, Div. Russell Uniform Co.

PROTECTIVE BREATHING & REVIVING APPARATUS

Air Breathing Equipment

Acme Protection Equipment Co.
Air-Shields, Inc.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Clark's Fire Prevention Service
Darley, W. S., & Co.
Fyr-Fyter Co., The, Fyr-Fyter Div.
Globe Industries, Inc., Special Products Div.
Halprin Supply Co.
Mine Safety Appliances Company
Oxygen Equipment & Service Co.
Pacific Marine Supply Co.
Russell Fire Equipment, Div. Russell Uniform Co.
Scott Aviation Corp.
Stephenson Corporation
Wheeler Protective Apparel, Inc.

Air Compressors

American LaFrance, Div. Sterling Precision Corp.
Cornelius Co., The
Darley, W. S., & Co.

Aspirators

Air-Shields, Inc.
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Emerson, J. H., Co.
Fyr-Fyter Co., The
Globe Industries, Inc., Special Products Div.
Halprin Supply Co.
Ohio Chemical & Surgical Equipment Co., Div., Air Reduction Co., Inc.
Oxygen Equipment & Service Co.
Russell Fire Equipment, Div. Russell Uniform Co.
Stephenson Corporation

Inhalators

American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Clark's Fire Prevention Service
Darley, W. S., & Co.
Emerson, J. H., Co.
Fyr-Fyter Co., The
Globe Industries, Inc., Special Products Div.
Halprin Supply Co.
Machine Products Corp.
Mine Safety Appliances Company
Ohio Chemical & Surgical Equipment Co., Div., Air Reduction Co., Inc.
Oxygen Equipment & Service Co.
Rockwood Sprinkler Div., Gamewell Company
Russell Fire Equipment, Div. Russell Uniform Co.
Scott Aviation Corp.
Stephenson Corporation

Masks

Acme Protection Equipment Co.
Air-Shields, Inc.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Bullard, E. D., Co.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fyr-Fyter Co., The
Globe Industries, Inc., Special Products Div.
Halprin Supply Co.
Mine Safetv Appliances Company
Ohio Chemical & Surgical Equipment Co., Div., Air Reduction Co., Inc.
Oxygen Equipment & Service Co.
Rockwood Sprinkler Div., Gamewell Company
Russell Fire Equipment, Div. Russell Uniform Co.
Stephenson Corporation

Oxygen Breathing Equipment

Acme Protection Equipment Co.
Air-Shields, Inc.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Clark's Fire Prevention Service
Darley, W. S., & Co.
Fire Prevention Service
Fyr-Fyter Co., The
Globe Industries, Inc., Special Products Div.
Halprin Supply Co.
Machine Products Corp.
Mine Safety Appliances Company
Ohio Chemical & Surgical Equipment Co., Div., Air Reduction Co., Inc.
Oxygen Equipment & Service Co.
Rockwood Sprinkler Div., Gamewell Company
Russell Fire Equipment, Div. Russell Uniform Co.
Scott Aviation Corp.
Stephenson Corporation

Respirators

Acme Protection Equipment Co.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Bullard, E. D., Co.
Central Fire Truck Corp.
Darley, W. S., & Co.
Emerson, J. H., Co.
Fyr-Fyter Co., The
Globe Industries, Inc., Special Products Div.
Halprin Supply Co.
Machine Products Corp.
Mine Safety Appliances Company
Oxygen Equipment & Service Co.
Rockwood Sprinkler Div., Gamewell Company
Russell Fire Equipment, Div. Russell Uniform Co.
Scott Aviation Corp.
Stephenson Corporation
Western Anesthesia Equipment Co., Inc.

Resuscitators

Air-Shields, Inc.
American LaFrance, Div. Sterling Precision Corp.
Batrow Laboratories, Inc.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Emerson, J. H., Co.
Fyr-Fyter Co., The
Globe Industries, Inc., Special Products Div.
Halprin Supply Co.
Machine Products Corp.
Mine Safety Appliances Company
Ohio Chemical & Surgical Equipment Co., Div., Air Reduction Co., Inc.
Oxygen Equipment & Service Co.
Pacific Marine Supply Co.
Pac-Kit Safety Equipment Co., Inc.
Russell Fire Equipment, Div. Russell Uniform Co.
Stephenson Corporation

UNDERWATER

Goodrich, B. F., Footwear & Flooring Co.
Halprin Supply Co.
Scott Aviation Corp.

SPLINTS

Darley, W. S., & Co.
Halperin, A. E., Co., Inc.
Medical Supply Co.
Orthopedic Frame Co.

STRETCHERS

American LaFrance, Div. Sterling Precision Corp.
Automotive Conversion Corp.
Bullard, E. D., Co.
Central Fire Truck Corp.
Darley, W. S., & Co.
Halperin, A. E., Co., Inc.
Halprin Supply Co.
Medical Supply Co.
Mine Safety Appliances Company
Russell Fire Equipment, Div. Russell Uniform Co.
Washington Products Co.

HOSE, HOSE FITTINGS & HOSE STREAM APPLIANCES

HOSE, CHEMICAL & BOOSTER

Acme-Hamilton Mfg. Corp.
American Biltrite Rubber Co., Boston Woven Hose & Rubber Div.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Bi-Lateral Fire Hose Co.
Central Fire Truck Corp.
Darley, W. S., & Co.
Eureka Fire Hose Div., U. S. Rubber Co.
Fabric Fire Hose Co.
Fraser International Co., Inc.
Fyr-Fyter Co., The
Goodall Rubber Co.
Goodrich, B. F., Industrial Products Co., Div. B. F. Goodrich Co.
Halprin Supply Co.
Hewitt-Robins, Inc., Hewitt Rubber Div.
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
Pacific Marine Supply Co.
Porter, H. K., Co., Inc., Thermoid Div.
Republic Rubber Division, Lee Rubber & Tire Corp.
Russell Fire Equipment, Div. Russell Uniform Co.
United States Rubber Co.
Universal Fire Apparatus Corp.

HOSE COTTON, R. L.

Acme-Hamilton Mfg. Corp.
American Biltrite Rubber Co., Boston Woven Hose & Rubber Div.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Bi-Lateral Fire Hose Co.
Central Fire Truck Corp.
Clark's Fire Prevention Service
Darley, W. S., & Co.
Eureka Fire Hose Div., U. S. Rubber Co.
Fabric Fire Hose Co.
Fire Prevention Service
Fraser International Co., Inc.
Fyr-Fyter Co., The
Goodall Rubber Co.
Goodrich, B. F., Industrial Products Co., Div. B. F. Goodrich Co.
Halprin Supply Co.
Hewitt-Robins, Inc., Hewitt Rubber Div.
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
Pacific Marine Supply Co.
Porter, H. K., Co., Inc., Thermoid Div.
Republic Rubber Division, Lee Rubber & Tire Corp.
Russell Fire Equipment, Div. Russell Uniform Co.
Universal Fire Apparatus Corp.

HOSE FORESTRY

Acme-Hamilton Mfg. Corp.
American Biltrite Rubber Co., Boston Woven Hose & Rubber Div.
American LaFrance, Div. Sterling Precision Corp.
Bi-Lateral Fire Hose Co.
Blaze Guard Mfg. Co.

Central Fire Truck Corp.
Darley, W. S., & Co.
Eureka Fire Hose Div., U. S. Rubber Co.
Fabric Fire Hose Co.
Fraser International Co., Inc.
Fyr-Fyter Co., The
Goodall Rubber Co.
Goodrich, B. F., Industrial Products Co., Div. B. F. Goodrich Co.
Halprin Supply Co.
Hewitt-Robins, Inc., Hewitt Rubber Div.
McIntire, F. N., Brass Works, Inc.
Pacific Marine Supply Co.
Porter, H. K., Co., Inc., Thermoid Div.
Republic Rubber Division, Lee Rubber & Tire Corp.
Russell Fire Equipment, Div. Russell Uniform Co.
Universal Fire Apparatus Corp.

HOSE, HIGH PRESSURE

Acme-Hamilton Mfg. Corp.
American Biltrite Rubber Co., Boston Woven Hose & Rubber Div.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Bi-Lateral Fire Hose Co.
Blaze Guard Mfg. Co.
Central Fire Truck Corp.
Darley, W. S., & Co.
Eureka Fire Hose Div., U. S. Rubber Co.
Fabric Fire Hose Co.
Fire Prevention Service
Fraser International Co., Inc.
Fyr-Fyter Co., The
Goodall Rubber Co.
Goodrich, B. F., Industrial Products Co., Div. B. F. Goodrich Co.
Halprin Supply Co.
Hewitt-Robins, Inc., Hewitt Rubber Div.
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
Pacific Marine Supply Co.
Porter, H. K., Co., Inc., Thermoid Div.
Republic Rubber Division, Lee Rubber & Tire Corp.
Russell Fire Equipment, Div. Russell Uniform Co.
United States Rubber Co.
Universal Fire Apparatus Corp.

HOSE, LINEN

Fraser International Co., Inc.

HOSE, RUBBER LINED

Acme-Hamilton Mfg. Corp.
American Biltrite Rubber Co., Boston Woven Hose & Rubber Div.
American LaFrance, Div. Sterling Precision Corp.
Bi-Lateral Fire Hose Co.
Blaze Guard Mfg. Co.
Central Fire Truck Corp.
Darley, W. S., & Co.
Eureka Fire Hose Div., U. S. Rubber Co.
Fabric Fire Hose Co.
Fire Prevention Service
Fraser International Co., Inc.
Fyr-Fyter Co., The
Goodall Rubber Co.
Goodrich, B. F., Industrial Products Co., Div. B. F. Goodrich Co.
Hale Fire Pump Co.
Halprin Supply Co.
Hewitt-Robins Inc., Hewitt Rubber Div.
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
Pacific Marine Supply Co.
Porter, H. K., Co., Inc., Thermoid Div.
Republic Rubber Division, Lee Rubber & Tire Corp.
Russell Fire Equipment, Div. Russell Uniform Co.
United States Rubber Co.
Universal Fire Apparatus Corp.

HOSE SUCTION

Acme-Hamilton Mfg. Corp.
American Biltrite Rubber Co., Boston Woven Hose & Rubber Div.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Bi-Lateral Fire Hose Co.
Central Fire Truck Corp.
Darley, W. S., & Co.
Eureka Fire Hose Div., U. S. Rubber Co.
Fabric Fire Hose Co.
Fraser International Co., Inc.
Fyr-Fyter Co., The
Goodall Rubber Co.
Goodrich, B. F., Industrial Products Co., Div. B. F. Goodrich Co.
Hale Fire Pump Co.
Halprin Supply Co.
Hewitt-Robins Inc., Hewitt Rubber Div.
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
Pacific Marine Supply Co.
Porter, H. K., Co., Inc., Thermoid Div.
Republic Rubber Division, Lee Rubber & Tire Corp.
Russell Fire Equipment, Div. Russell Uniform Co.
United States Rubber Co.
Universal Fire Apparatus Corp.

HOSE APPLIANCES

Holders

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Powhatan Brass & Iron Works
Wooster Brass Products, Fyr-Fyter Co., The

Hydrant Gates

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Eastman, Samuel, Co., Inc.
Fyr-Fyter Co., The
Greenberg's, M., Sons
Halprin Supply Co.
McIntire, F. N., Brass Works, Inc
Machine Products Corp.
Powhatan Brass & Iron Works
Russell Fire Equipment, Div. Russell Uniform Co.
Universal Fire Apparatus Corp.
Wooster Brass Products, Fyr-Fyter Co., The

Increasers and Reducers

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Camcone Products, Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Eastman, Samuel, Co., Inc.
Fyr-Fyter Co., The
Greenberg's, M., Sons
Halprin Supply Co.
McIntire, F. N., Brass Works, Inc.
Machine Products Corp.
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Fire Equipment, Div. Russell Uniform Co.
Wooster Brass Products, Fyr-Fyter Co., The

Siamese and Y-fittings

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Camcone Products, Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Eastman, Samuel, Co., Inc.
Elkhart Brass Mfg. Co., Inc.
Fyr-Fyter Co., The
Greenberg's, M., Sons
Grinnell Co., Inc.
Halprin Supply Co.
McIntire, F. N., Brass Works, Inc.
Machine Products Corp.
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Fire Equipment, Div. Russell Uniform Co.
Wooster Brass Products, Fyr-Fyter Co., The

Siphons

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The

Suction Strainers

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Eastman, Samuel, Co., Inc.
Elkhart Brass Mfg. Co., Inc.
Fol-Da-Tank Co.
Fyr-Fyter Co., The
Greenberg's, M., Sons
Halprin Supply Co.
McIntire, F. N., Brass Works, Inc.
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Fire Equipment, Div. Russell Uniform Co.
Wooster Brass Products, Fyr-Fyter Co., The

Swivel Joints

American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Camcone Products, Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fyr-Fyter Co., The
Greenberg's, M., Sons
Halprin Supply Co.
McIntire, F. N., Brass Works, Inc.
Russell Fire Equipment, Div. Russell Uniform Co.
Wooster Brass Products, Fyr-Fyter Co., The

HOSE BRIDGES

American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Consolidated Welding & Engineering, Inc.
Darley, W. S., & Co.
Halprin Supply Co.
Russell Fire Equipment, Div. Russell Uniform Co.

HOSE CABINET UNITS

American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fraser International Co., Inc.
Fyr-Fyter Co., The
Halprin Supply Co.
Pacific Marine Supply Co.
Russell Fire Equipment, Div. Russell Uniform Co.

HOSE CARTS, RACKS

American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fyr-Fyter Co., The
H. & H. Truck Tank Co., Inc.
Halprin Supply Co.
Hannay, Clifford B., & Son, Inc
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Russell Fire Equipment, Div. Russell Uniform Co.

HOSE CLAMPS

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Bar-Way Mfg. Co.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fyr-Fyter Co., The
Halprin Supply Co.
Pacific Marine Supply Co.
Pirsch, Peter, & Sons Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Republic Rubber Division, Lee Rubber & Tire Corp.

HOSE CLEANER

American LaFrance, Div. Sterling Precision Corp.
Bi-Lateral Fire Hose Co.
Darley, W. S., & Co.
Halprin Supply Co.

HOSE COUPLING EXPANDERS

Akron Brass Mfg. Co., Inc
American LaFrance, Div. Sterling Precision Corp.
Bell & Pihl Co.
Central Fire Truck Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fraser International Co., Inc.
Fyr-Fyter Co., The
Greenberg's, M., Sons
Halprin Supply Co.
Machine Products Corp.
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Republic Rubber Division, Lee Rubber & Tire Corp.
Russell Fire Equipment, Div. Russell Uniform Co.
Wooster Brass Products, Fyr-Fyter Co., The

HOSE COUPLING EXPANSION RINGS

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Bell & Pihl Co.
Central Fire Truck Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc
Eureka Fire Hose Div., U. S. Rubber Co.

Hose Coupling Expansion Rings (Continued)

Fraser International Co., Inc.
Fyr-Fyter Co., The
Goodrich, B. F., Industrial Products Co., Div. B. F. Goodrich Co.
Greenberg's, M., Sons
Halprin Supply Co.
Machine Products Corp.
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Republic Rubber Division, Lee Rubber & Tire Corp.
Russell Fire Equipment, Div. Russell Uniform Co.
Wooster Brass Products, Fyr-Fyter Co., The

HOSE COUPLINGS, ADAPTERS, WRENCHES

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Bar-Way Mfg. Co. (Couplings, High Pressure)
Bean, John, Div., Food Machinery & Chemical Corp.
Camcone Products, Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fabric Fire Hose Co.
Fraser International Co., Inc.
Fyr-Fyter Co., The
Goodrich, B. F., Industrial Products Co., Div. B. F. Goodrich Co.
Greenberg's, M., Sons
Halprin Supply Co.
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
Machine Products Corp.
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Republic Rubber Division, Lee Rubber & Tire Corp.
Russell Fire Equipment, Div. Russell Uniform Co.
Universal Fire Apparatus Co.
Wooster Brass Products, Fyr-Fyter Co., The

HOSE CUTTERS

Bell & Pihl Co.

HOSE DRYERS

American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Circul-Air Corp.
Darley, W. S., & Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Russell Fire Equipment, Div. Russell Uniform Co.

HOSE FIBRE, POLYESTER

Darley, W. S., & Co.
Du Pont de Nemours, E. I. & Co., Inc.
Fraser International Co., Inc.
Porter, H. K., Co., Inc., Thermoid Div.

HOSE INCREASERS AND REDUCERS

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Eureka Fire Hose Div., U. S. Rubber Co.
Fyr-Fyter Co., The
Greenberg's, M., Sons
Halprin Supply Co.
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
Pacific Marine Supply Co.
Wooster Brass Products, Fyr-Fyter Co., The

HOSE JACKETS

American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Halprin Supply Co.
Porter, H. K., Co., Inc., Thermoid Div.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Republic Rubber Division, Lee Rubber & Tire Corp.
Wooster Brass Products, Fyr-Fyter Co., The

HOSE REELS

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Ardmore Products
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fyr-Fyter Co., The
H. & H. Truck Tank Co., Inc.
Halprin Supply Co.
Hannay, Clifford B., & Son, Inc.
Industrial Electrical Works
National Foam System, Inc.
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Russell Fire Equipment, Div. Russell Uniform Co.

HOSE STORAGE RACKS

American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Circul-Air Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc
Fraser International Co., Inc.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
National Foam System, Inc.
W-B Manufacturing Co.

HOSE TURN TABLES

American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Circul-Air Corp.
Darley, W. S., & Co.
Halprin Supply Co.
Howe Fire Apparatus Co.

HOSE WASHERS

American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Circul-Air Corp.
Darley, W. S., & Co.
Eureka Fire Hose Div., U. S. Rubber Co.
Fyr-Fyter Co., The
Goodrich, B. F., Industrial Products Co., Div. B. F. Goodrich Co.
Halprin Supply Co.
Howe Fire Apparatus Co.
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Republic Rubber Division, Lee Rubber & Tire Corp.

HYDRANT WRENCHES

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fyr-Fyter Co., The
Greenberg's, M., Sons
Halprin Supply Co.
Howe Fire Apparatus Co.
Mueller Co.
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Fire Equipment, Div. Russell Uniform Co.
Universal Fire Apparatus Corp.
Waterous Company
Wooster Brass Products, Fyr-Fyter Co., The

HYDRANTS

Darley, W. S., & Co.
Greenberg's, M., Sons
Halprin Supply Co.
Mueller Co.
Waterous Company

NOZZLES

Cellar Pipe

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Halprin Supply Co.
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
Machine Products Corp.
Pacific Marine Supply Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Rockwood Sprinkler Div., Gamewell Company
Russell Fire Equipment, Div. Russell Uniform Co.
Wooster Brass Products, Fyr-Fyter Co., The

Deck Guns

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Eastman, Samuel, Co., Inc.
Elkhart Brass Mfg. Co., Inc.
Halprin Supply Co.
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
Rockwood Sprinkler Div., Gamewell Company
Wooster Brass Products, Fyr-Fyter Co., The

Deluge Sets

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Eastman, Samuel, Co., Inc.
Elkhart Brass Mfg. Co., Inc.
Fraser International Co., Inc.
Greenberg's, M., Sons
Halprin Supply Co.
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
National Foam System, Inc.
Rockwood Sprinkler Div., Gamewell Company
Wooster Brass Products, Fyr-Fyter Co., The

Distributor

Akron Brass Mfg. Co., Inc
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fraser International Co., Inc.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
Machine Products Corp.
Wooster Brass Products, Fyr-Fyter Co., The

Foam

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fraser International Co., Inc.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Machine Products Corp.
National Foam System, Inc.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Rockwood Sprinkler Div., Gamewell Company
Russell Fire Equipment, Div. Russell Uniform Co.

Fog

Akron Brass Mfg. Co., Inc.
American Fire Apparatus Co.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Camcone Products, Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fraser International Co., Inc.
Fyr-Fyter Co., The
Halprin Supply Co.
Hardie Mfg. Co., Inc.
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
Machine Products Corp.
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Rockwood Sprinkler Div., Gamewell Company
Russell Fire Equipment, Div. Russell Uniform Co.
Santa Rosa Fire Nozzle, Inc.
Wooster Brass Products, Fyr-Fyter Co., The

Fog Foam

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
National Foam System, Inc.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Rockwood Sprinkler Div., Gamewell Company
Russell Fire Equipment, Div. Russell Uniform Co.

Fog High Pressure

Akron Brass Mfg. Co., Inc.
American Fire Apparatus Co.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp. (gun type)
Central Fire Truck Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fyr-Fyter Co., The
Halprin Supply Co.
Hardie Mfg. Co., Inc.
Howe Fire Apparatus Co.
Powhatan Brass & Iron Works
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Rockwood Sprinkler Div., Gamewell Company
Russell Fire Equipment, Div. Russell Uniform Co.

Master Stream

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Camcone Products, Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.

Greenberg's, M., Sons
Halprin Supply Co.
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
Machine Products Corp.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Fire Equipment, Div. Russell Uniform Co.
Wooster Brass Products, Fyr-Fyter Co., The

Partition

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Halprin Supply Co.
Howe Fire Apparatus Co.
Machine Products Corp.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Rockwood Sprinkler Div., Gamewell Company
Russell Fire Equipment, Div. Russell Uniform Co.
Wooster Brass Products, Fyr-Fyter Co., The

Pipes, Ladder

Akron Brass Mfg. Co., Inc. (also automatic)
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Eastman, Samuel, Co., Inc.
Elkhart Brass Mfg. Co., Inc. (also automatic)
Halprin Supply Co.
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Fire Equipment, Div. Russell Uniform Co.
Seagrave Corporation
Wooster Brass Products, Fyr-Fyter Co., The

Pipes, Play

Akron Brass Mfg. Co., Inc
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Camcone Products, Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Eastman, Samuel, Co., Inc.
Elkhart Brass Mfg. Co., Inc.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
Machine Products Corp.
Powhatan Brass & Iron Works
Rockwood Sprinkler Div., Gamewell Company
Russell Fire Equipment, Div. Russell Uniform Co.
Wooster Brass Products, Fyr-Fyter Co., The

Shut-Off

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Camcone Products, Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
Machine Products Corp.
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Rockwood Sprinkler Div., Gamewell Company
Russell Fire Equipment, Div. Russell Uniform Co.
Wooster Brass Products, Fyr-Fyter Co., The

Turrets, Mechanically Operated

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Halprin Supply Co.
Howe Fire Apparatus Co.
National Foam System, Inc.
Rockwood Sprinkler Div., Gamewell Company
Wooster Brass Products, Fyr-Fyter Co., The

VALVES

Discharge and Suction

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Camcone Products, Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fraser International Co., Inc.
Fyr-Fyter Co., The
Greenberg's, M., Sons
Hale Fire Pump Co.
Halprin Supply Co.
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
Machine Products Corp.
Rockwood Sprinkler Div., Gamewell Company
Russell Fire Equipment, Div. Russell Uniform Co.
Waterous Company
Wooster Brass Products, Fyr-Fyter Co., The

Hose

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fraser International Co., Inc.
Greenberg's, M., Sons
Hale Fire Pump Co.
Halprin Supply Co.
Howe Fire Apparatus Co.
Machine Products Corp.
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Russell Fire Equipment, Div. Russell Uniform Co.
Rockwood Sprinkler Div., Gamewell Company
Wooster Brass Products, Fyr-Fyter Co., The

Hydrant-Gates

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Camcone Products, Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Eastman, Samuel, Co., Inc.
Elkhart Brass Mfg. Co., Inc.
Fraser International Co., Inc.
Fyr-Fyter Co., The
Greenberg's, M., Sons
Halprin Supply Co.
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
Machine Products Corp.
Mueller Co.
Powhatan Brass & Iron Works
Russell Fire Equipment, Div. Russell Uniform Co.
Waterous Company
Wooster Brass Products, Fyr-Fyter Co., The

Post Indicator

American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Greenberg's, M., Sons
Grinnell Co., Inc.
Mueller Co.
Rockwood Sprinkler Div., Gamewell Company

Relief

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fyr-Fyter Co., The
Hale Fire Pump Co.
High Fog Pump Co.
Howe Fire Apparatus Co.
Mueller Co.
Pacific Marine Supply Co.
Universal Fire Apparatus Corp.
Waterous Company

LIGHTING AND LIGHTING EQUIPMENT

BATTERIES, FLASHLIGHT

Darley, W. S., & Co.
Halprin Supply Co.
Mine Safety Appliances Co.
Pacific Marine Supply Co.
Sonotone Corp.

BATTERY CHARGERS

Carpenter Manufacturing Co.
Darley, W. S., & Co.
Halprin Supply Co.
Harrington Signal Co.
Koehler Mfg. Co.
Onan, D. W., & Sons, Inc.
Pioneer Gen-E-Motor Corp.
Russell Fire Equipment, Div. Russell Uniform Co.
Sonotone Corp.

EMERGENCY GENERATORS

Portable

American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fairbanks, Morse & Co., Electrical Div.
Halprin Supply Co.
Howe Fire Apparatus Co.
Kohler Co.
Machine Products Corp.
Milwaukee Electric Tool Corp.
Onan, D. W., & Sons, Inc.
Pacific Marine Supply Co.
Pacific Mercury Electronics, Inc.
Pioneer Gen-E-Motor Corp.
Russell Fire Equipment, Div. Russell Uniform Co.
Waukesha Motor Company
Wincharger Corp., subs., Zenith Radio Corp.

Stationary

American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Fairbanks, Morse & Co., Electrical Div.
Kohler Co.
Onan, D. W., & Sons, Inc.
Pacific Mercury Electronics, Inc.
Pioneer Gen-E-Motor Corp.
Waukesha Motor Company
Wincharger Corp., subs., Zenith Radio Corp.

LIGHTS

Emergency (Automatic)

American LaFrance, Div. Sterling Precision Corp.
Carpenter Manufacturing Co.
Darley, W. S., & Co.
Dazl-Lite Products
Dietz, R. E., Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Koehler Mfg. Co.
McDermott, Julian, A., Corp.
Macchi & Company
Russell Fire Equipment, Div. Russell Uniform Co.
Trippe Mfg. Co.
U-C Lite Manufacturing Co.
Whelen Engineering Co., Inc.

Flares

American LaFrance, Div. Sterling Precision Corp.
Carpenter Manufacturing Co.
Darley, W. S., & Co.
Halprin Supply Co.
McDermott, Julian A., Corp.
U-C Lite Manufacturing Co.

Floodlights

American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Carpenter Manufacturing Co.
Central Fire Truck Corp.
Darley, W. S., & Co.
Halprin Supply Co.
Howe Fire Apparatus Co.
McDermott, Julian A., Corp.
Natale Machine & Tool Co.
Russell Fire Equipment, Div. Russell Uniform Co.
Wincharger Corp., subs., Zenith Radio Corp.

Hand Lamps

American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Carpenter Manufacturing Co.
Central Fire Truck Corp.
Darley, W. S., & Co.
Halprin Supply Co.
Koehler Mfg. Co.
McDermott, Julian A., Corp.
Natale Machine & Tool Co.
Russell Fire Equipment, Div. Russell Uniform Co.
U-C Lite Manufacturing Co.

Reels, Cable—Power Supply (Portable)

Industrial Electrical Works

Searchlights

American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Carpenter Manufacturing Co.
Central Fire Truck Corp.
Darley, W. S., & Co.
Halprin Supply Co.
Koehler Mfg. Co.
McDermott, Julian A., Corp.
Natale Machine & Tool Co.
Pacific Marine Supply Co.

PUMPS

PUMPS

Fire Apparatus

American Fire Pump Co.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Brumbaugh Body Co., Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fyr-Fyter Co., The
Hale Fire Pump Co.
Halprin Supply Co.
Howe Fire Apparatus Co.
Mack Trucks, Inc.
Oberdorfer Foundries, Inc.
Russell Fire Equipment, Div. Russell Uniform Co.
Seagrave Corporation
Sharpsville Steel Fabricators, Inc.
Universal Fire Apparatus Corp.
Waterous Company

Hand Pumps

Akron Brass Mfg. Co., Inc.
Central Fire Truck Corp.
Darley, W. S., & Co
Halprin Supply Co.
Howe Fire Apparatus Co.
Pacific Marine Supply Co.
Smith, D. B., & Co., Inc.
Universal Fire Apparatus Corp.

High Pressure

American Fire Pump Co.
American LaFrance, Div. Sterling Precision Corp.
Brumbaugh Body Co., Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Gorman-Rupp Co.
Hale Fire Pump Co.
Halprin Supply Co.
High Fog Pump Co.
Howe Fire Apparatus Co.
Machine Products Corp.
Marine Products Company
Pacific Marine Supply Co.
Universal Fire Apparatus Corp.
Waterous Company

Hydrant Dewatering

Akron Brass Mfg. Co., Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Gorman-Rupp Co.
Hale Fire Pump Co.
Halprin Supply Co.
Howe Fire Apparatus Co.
Marine Products Company

Portable

American Fire Pump Co.
American LaFrance, Div. Sterling Precision Corp.
Bell & Gossett Co., Marlow Pumps Div.
Brumbaugh Body Co., Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fairbanks, Morse & Co., Electrical Div.
Fyr-Fyter Co., The
Gorman-Rupp Co.
Hale Fire Pump Co.
Halprin Supply Co.
Howe Fire Apparatus Co.
Marine Products Company
Pacific Marine Supply Co.
Porto Pump, Inc.
Rice Pump & Machine Co.
Sharpsville Steel Fabricators, Inc.
Smith, D. B., & Co., Inc.
Universal Fire Apparatus Corp.

Suction Boosters

Brumbaugh Body Co., Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fyr-Fyter Co., The
Gorman-Rupp Co.
Hale Fire Pump Co.
Halprin Supply Co.
Howe Fire Apparatus Co.
Marine Products Co.
Potter-Horn, Inc.
Universal Fire Apparatus Corp.

Trailer Mounted

American Fire Pump Co.
Brumbaugh Body Co., Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Gorman-Rupp Co.
Hale Fire Pump Co.
Halprin Supply Co.
Howe Fire Apparatus Co.
Marine Products Co.
Maxim Motor Co.
National Foam System, Inc.
Sharpsville Steel Fabricators, Inc.
Universal Fire Apparatus Corp.
Waterous Company

TOOLS

AXES

American LaFrance, Div. Sterling Precision Corp.
Atlas Safety Equipment Co., Inc. (Insulated)
Bean, John, Div., Food Machinery & Chemical Corp.
Cairns & Bro., Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Mann Edge Tool Company
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Russell Fire Equipment, Div. Russell Uniform Co.
Universal Fire Apparatus Corp.

CUTTERS, BAR, CHAIN, WIRE

American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Central Fire Truck Corp.
Halprin Supply Co.
Porter, H. K., Inc.
Russell Fire Equipment, Div. Russell Uniform Co.

CUTTING & WELDING EQUIPMENT

American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Halprin Supply Co.
Russell Fire Equipment, Div. Russell Uniform Co.

FORCIBLE ENTRY TOOLS

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Blackhawk Automotive Division
Central Fire Truck Corp.
Darley, W. S., & Co.
Halprin Supply Co.
Hirsch Fire Equipment Co.
Howe Fire Apparatus Co.
Mann Edge Tool Company
Milwaukee Electric Tool Corp.
Pirsch, Peter, & Sons, Co.
Porter, H. K., Inc.
Potter Fire Escape Co.
Russell Fire Equipment, Div. Russell Uniform Co.
Universal Fire Apparatus Corp.
Wooster Brass Products, Fyr-Fyter Co., The

HOOK & PIKE POLES

Akron Brass Mfg. Co., Inc.
Aluminum Ladder Co.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
C. D. Pike & Fire Hook Mfg. Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Duo-Safety Ladder Corp.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Pacific Marine Supply Co.
Russell Fire Equipment, Div. Russell Uniform Co.
Universal Fire Apparatus Corp.
Wooster Brass Products, Fyr-Fyter Co., The

HOT LINE HANDLING TOOLS

Bean, John, Div., Food Machinery & Chemical Corp.
Darley, W. S., & Co.
Halprin Supply Co.

JACKS (Hydraulic)

Blackhawk Automotive Division
Darley, W. S., & Co.
Halprin Supply Co.
Porter, H. K., Inc.

POWER TOOLS

Boston Clip & Tag Co.
Darley, W. S., & Co.
Halprin Supply Co.
Milwaukee Electric Tool Corp.
Mine Safety Appliances Co.
Pacific Marine Supply Co.

RESCUE TOOLS, HYDRAULIC

Blackhawk Automotive Division
Darley, W. S., & Co.
Halprin Supply Co.
Milwaukee Electric Tool Corp.
Mine Safety Appliances Company
Porter, H. K., Inc.
Russell Fire Equipment, Div. Russell Uniform Co.

SAWS, CHAIN

Darley, W. S., & Co.
Halprin Supply Co.
Milwaukee Electric Tool Corp., (Electric)
Pacific Marine Supply Co.

TOOLS, GENERAL PURPOSE

Bean, John, Div., Food Machinery & Chemical Corp.
Boston Clip & Tag Co.
Central Fire Truck Corp.
Darley, W. S., & Co.
Halprin Supply Co.
Pacific Marine Supply Co.
Universal Fire Apparatus Corp.

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Listed in WHERE TO BUY SECTION

For Advertisers in this issue see Advertising Index on page 834

A

Acme-Hamilton Mfg. Corp., Meade St., Trenton, 3, N. J.
Acme Protection Equipment Co., 1201 Kalamazoo St., South Haven, Mich.
Air-Shields, Inc., Hatboro, Pa.
Akron Brass Mfg. Co., Inc., 1500 Spruce St., Wooster, Ohio
Alb Rubber Co., 366 Somerville Ave., Somerville 43, Mass.
Alim Corp., 11 Park Place, New York 7, N. Y.
Aluminum Ladder Co., West Darlington St. Ext., Florence, S. C.
American Biltrite Rubber Co., Inc., Boston Woven Hose & Rubber Div., P. O. Box 1071, Boston 3, Mass.
American District Telegraph Co., 155 Sixth Ave., New York 13, N. Y.
American Fire Apparatus Co., Box 1024, Battle Creek, Mich.
American Fire Pump Co., P. O. Box 219, 803 Main St. Rd., Battle Creek, Mich.
American LaFrance, Div. Sterling Precision Corp., 100 E. LaFrance St., Elmira, N. Y.
Ansul Chemical Co., 1 Stanton St.. Marinette, Wis.
Antrex Corp., 2001 W. Willow, Chicago 47, Ill.
Ardmore Products, 1825 Shermer Rd., Northbrook, Ill.
Atlas Safety Equipment Co., Inc., 173-179 N. 10th St., Brooklyn 11, N. Y.
Audio Equipment Co., Inc., 75 Harbor Road, Port Washington, N. Y.
Autocall Co., Shelby, Ohio
Automotive Conversion Corp., 2191 Cole Ave., Birmingham, Mich.

B

Bar-Way Mfg. Co., 2770 Summer St., Stamford, Conn.
Batrow Laboratories, Inc., Branford, Conn.
Baughman Mfg. Co., 318 Shipman Rd., Jerseyville, Ill.
Beacon Falls Rubber Footwear, Beacon Falls, Conn.
Bean, John, Div., Food Machinery and Chemical Corp., 1305 S. Cedar St., Lansing 4, Mich.
Bell & Gossett Co., Marlow Pumps Div., P. O. Box 200, Midland Park, N. J.
Bell & Pihl Co., 17 Wyman St., Arlington 74, Mass.
Bi-Lateral Fire Hose Co., 20 N. Wacker Dr., Chicago 6, Ill.
Blackhawk Automotive Div., 5325 W Rogers St., Milwaukee 46, Wis.
Blackinton, V. H., & Co., Inc., 140 Commonwealth Ave., Attleboro Falls, Mass.
Blaze Guard Mfg. Co., North Bergen, N. J .
Boardman Co., Fire Apparatus Div., 1401 S. W. 11th St., P. O. Box 1152, Oklahoma City 1, Okla.
Body-Guard Mfg. Co., 222 S. Fourth St., St. Joseph, Mo.
Boma Corp., 718 Norman Place, Westfield, N. J.
Boston Clip & Tag Co., 48 Grove St., Somerville, Mass.
Braxmar, C. G., Co., Inc., 216 E. 45th St., New York 17, N. Y.
Brumbaugh Body Co., Inc., 100 W. Plank Rd., Altoona, Pa.
Bullard, E. D., Co., 2680 Bridgeway, Sausalito, Cal.

C

Cairns & Bro., Inc., 854 Bloomfield Ave., Allwood, Clifton, N. J.
Camcone Products, Inc., Bridgeway at Nevada St., Sausalito, Cal.
Canvas Products Corp., 19 E. McWilliams St., Fond Du Lac, Wis.
Carpenter Mfg. Co., 628 Bradley St., Somerville 45, Mass.
C. D. Pike & Fire Hook Mfg. Corp., P. O. Box 1649, New Haven 7, Conn.
Central Fire Truck Corp., P. O. Box 158, Manchester, Mo.
Champion Sprayer Co., 6553 Heintz Ave., Detroit 11, Mich.
Christopher Co., The, Div. International Auto-Industries Corp., 1095 Madison Ave., New York 28, N. Y.
Circul-Air Corp., 565 E. Milwaukee Ave., Detroit 2, Mich.
Clark's Fire Prevention Service, 422—73rd St., North Bergen, N. J.
Coin Savers, 330 Second St., New Cumberland, Pa.
Consolidated Welding & Engineering, Inc., 34 French St., Methuen, Mass.
Controls For Radiation, Inc., 130 Alewife Brook Parkway, Cambridge 40, Mass.
Cornelius Company, The, 550—39th Ave., N. E., Minneapolis 21, Minn.

D

Dakota Chemical Co., 1802 W. 12th St., Sioux Falls, S. D.
Darley, W. S., & Co., 2810 Washington Blvd., Chicago 12, Ill.
Dazl-Lite Products, 17 E. Pershing Rd., Kansas City, Mo.
Delco-Remy Div., General Motors Corp., 2401 Columbus Ave., Anderson, Ind.
Delehanty Correspondence School, 115 E. 15th St., New York, N. Y.
Dietz, R. E., Co., 225 Wilkinson St., Syracuse, N. Y.
Divco Truck Div., Divco-Wayne Corp., 22000 Hoover Rd., Detroit 5, Mich.
Du Mont, Allen B., Laboratories, Inc., 750 Bloomfield Ave., Clifton, N. J.
Duo-Safety Ladder Corp., 513 W. 9th Ave., Oshkosh, Wis.
Du Pont de Nemours, E. I., & Co., Inc., Textile Fibers Dept., Wilmington 98, Del.

E

Eastman, Samuel, Co., Inc., Foundry St., Concord, N. H.
Electric Autolite Co., Champlain St., Toledo 1, Ohio.
Electronics Div., Hobby Enterprises, Inc., 17 Second Ave., Bay Shore, L. I., N. Y.
Elkhart Brass Mfg. Co., Inc., 1302 W. Beardsley Ave., Elkhart, Ind.
Emerson, J. H., Co., 22 Cottage Park Ave., Cambridge 40, Mass.
Eureka Fire Hose Div., U. S. Rubber Co., 1 Market St., Passaic, N. J.
Everson-Ross Co., Inc., 55 Vandam St., New York 13, N. Y.

F

F D Products, 90 Tracey Place, N-1, Englewood, N. J.
Fabric Fire Hose Co., Sandy Hook, Conn.
Fairbanks, Morse & Co., Electrical Div., 303 N. Henderson Ave., Freeport, Ill.
Falcon Alarm Co., Inc., 243 Broad St., Summit, N. J.
Federal Sign & Signal Corp., 13602 Western Ave., Blue Island, Ill.
Fire Prevention Service, 442—73rd St., North Bergen, N. J.
Firetox System, Inc., P. O. Box 216, Peterborough, N. H.
Fire Trucks, Inc., P. O. Box 783, Mt Clemens, Mich.
Flamort Chemical Co., 746 Natoma St., San Francisco 3, Cal.
Flex-O-Lite Mfg. Corp., P. O. Box 3066, 8301 Flex-O-Lite Drive (Affton Br), St. Louis 23, Mo.
Fol-Da-Tank Co., Box 361, Rock Island, Ill.
Ford Division, Fleet Sales Dept., P. O. Box 658, Dearborn, Mich.
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Fulton Cotton Mills, P. O. Box 1726, Atlanta 1, Ga.
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Fyrepel Products, Inc., P. O. Box 503, Newark, Ohio
Fyr-Fyter Co., The, Fyr-Fyter Div., 221 Crane St., Dayton 1, Ohio

G

Gamewell Co., 1238 Chesnut St., Newton Upper Falls 64, Mass.
Garrison Mfg. Co., Inc., 4609 E Sheila St., Los Angeles 22, Cal.
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General Railway Signal Co., Electronic Control Div., P. O. Box 600, Rochester 2, N. Y.
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Globe Industries, Inc., Special Products Div., 125 Sunrise Pl., Dayton 7, Ohio
Globe Manufacturing Co., Pittsfield, N. H.
GMC Truck & Coach Div., General Motors Corp., 660 S. Boulevard, Pontiac 11, Mich.
Gold Crest Safety Equipment Corp., P. O. Box 155, U. S. Highway 22, Dunellen, N. J.
Gonset Div., Young Spring & Wire Corp., 801 S. Main St., Burbank, Cal.
Goodall Rubber Co., Whitehead Rd., Trenton 4, N. J.
Goodrich, B. F., Footwear & Flooring Co., Watertown 72, Mass.
Goodrich, B. F., Industrial Products Co., Div., B. F. Goodrich Co., 500 S. Main St., Akron 18, Ohio
Gorman-Rupp Co., 305 Bowman St., Mansfield, Ohio
Greenberg's, M., Sons, 765 Folsom St., San Francisco 7, Cal.
Grinnell Co., Inc., 260 W. Exchange St., Providence 1, R. I.
Grove Mfg. Co., Shadygrove, Pa.
Grover Products Co., 1233 S. Hope St., Los Angeles, Cal.

H

H. & H. Truck Tank Co., Inc., 725 Tonnele Ave., Jersey City 7, N. J.
Hale Fire Pump Co., 708 Spring Mill Ave., Conshohocken, Pa.
Hallett Mfg. Co., 5910 Bowcroft St., Los Angeles 16, Cal.
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Handford-Brown Co., Coytesville-On-The-Hudson, N. J.
Hannay, Clifford B., & Son, Inc., Westerlo, N. Y.
Hardie Mfg. Co., Inc., 730 S. Main St., Wilkes-Barre, Pa.
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Harron Labs., 42-10 220th St., Bayside 61, N. Y.
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Hess & Eisenhardt Co., 8959 Blue Ash Ave., Cincinnati 42, Ohio
Hewitt-Robins, Inc., 666 Glenbrook Ave., Stamford, Conn.
High Fog Pump Co., 35 Santa Clara, Arcadia, Cal.
Hirsch Fire Equipment Co., 2859 E. 50th St., Los Angeles, Cal.
Hobby Enterprises, Inc., 17 Second Ave., Bay-Shore, L. I., N. Y.
Hofert, J. Co., 7 William St., Newark 2, N. J.
Holiday Co., 1666 Kinsey St., Philadelphia, Pa.
Houston Instrument Corp., Box 22234, Houston 27, Texas
Howe Fire Apparatus Co., 1402 W. 22nd St., Anderson, Ind.

I

Industrial Electrical Works, 1507 Chicago St., Omaha, Neb.
International Bronze Tablet Co., Inc., 150 W. 22nd St., New York 11, N. Y.
International Harvester Co., Motor Truck Div., 180 N. Michigan Ave., Chicago 1, Ill.
Investigations Institute, 53 W. Jackson Blvd., Chicago 4, Ill.

J

Janesville Apparel Co., 216 N. Franklin St., Janesville, Wis.

K

Kidde Ultrasonic & Detection Alarms, Inc., subs. Walter Kidde & Co., Inc., 833A Brighton Rd., Clifton, N. J.
Kidde, Walter, & Co., Inc., 833A Main St., Belleville 9, N. J.
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Kohler Co., Kohler, Wis.

L

Lawrence, Inc., P. O. Box 5106, Seven Oaks Sta., Detroit 35, Mich.
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M

Macchi & Co., 819 Valencia St., San Francisco 10, Cal.
Machine Products Corp., 125 Hollier Ave., Dayton 3, Ohio
Mack Trucks, Inc., Fire Apparatus Div., 601 S. 10th St., Allentown, Pa.
Mann Edge Tool Co., Box 331, Lewistown, Pa.
Marine Products Co., 515 Lycaste Ave., Detroit 14, Mich.
Marryatt, Lane & Co., Inc., 248 Main St., Fort Lee, N. J.
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Milwaukee Electric Tool Corp., 5354 W. State St., Milwaukee 8, Wis.
Mine Safety Appliances Co., 201 North Braddock Ave., Pittsburgh 8, Pa.
Minnesota Mining & Mfg. Co., 900 Bush Ave., St. Paul 6, Minn.
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Motorola Communications & Electronics, Inc., 4501 West Augusta Blvd., Chicago 51, Ill.
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Mueller Co., 512 W. Cerro Gordo St., P. O. Box 671, Decatur, Ill.

N

Natale Machine and Tool Co., 339 State Highway 17, Carlstadt, N. J.
National Foam System, Inc., Union and Adams Sts., West Chester, Pa.
Norlund, O. A., Co., P. O. Box 351, Lewistown, Pa.

O

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Ohio Chemical & Surgical Equipment Co., Div. Air Reduction Co., Inc., 1400 E Washington Ave., Madison 10, Wis.
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Orthopedic Frame Co., 420 Alcott St., Kalamazoo, Mich.
Oxygen Equipment & Service Co., 8335 S. Halsted St., Chicago 20, Ill.

P

Pacific Marine Supply Co., 1223 Western Ave., Seattle 1, Wash.
Pacific Mercury Electronics, Inc., 14052 Burbank Blvd., Van Nuys, Calif.
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Pioneer Gen-E-Motor Corp., 5832 W. Dickens Ave., Chicago 39, Ill.
Pirsch, Peter, & Sons Co., 1308 35th St., Kenosha, Wis.
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Porter, H. K., Inc., 74 Foley St., Somerville 43, Mass.
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Porto Pump, Inc., 19735 Ralston Ave., Detroit 3, Mich.
Potter Fire Escape Co., 6110 N. California Ave., Chicago 45, Ill.
Potter-Horn, Inc., 936 Statler Bldg., Boston 16, Mass.
Powhatan Brass & Iron Works, Ranson, W. Va.
Pyrene—C-O-Two, Div., Fyr-Fyter Co., The, U. S. Highway 1, Newark 1, N. J.

R

Reese, S. H., 57 Warren St., New York 7, N. Y.
Republic Rubber Div., Lee Rubber & Tire Corp., 1410 Albert St., Youngstown 1, Ohio
Rescue Alarm Co., 84 State St., Boston 9, Mass.
Rice Pump & Machine Co., 600 Park St., Belgium, Wis.
Rockwood Sprinkler Co., Div., Gamewell Co., 38 Harlow St., Worcester 5, Mass
Rupert Parachute Co., Palatine Road, Wheeling, Ill.
Russell Fire Equipment, Div. Russell Uniform Co., 192 Lexington Ave., New York 16, N. Y.

S

Safa Alarm Div., Inc., Fyr-Fyter Co., The, P. O. Box 1118, U. S. Highway #1, Newark 1, N. J.
Santa Rosa Fire Nozzle, Inc., P. O. Box 94, Santa Rosa, Cal.
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Superior Signal Co., Inc., 6 Colfax St., South River, N. J.
Super Vacuum Manufacturing Co., Inc., 3151½ E. 17th Ave., Denver 3, Colo.

T

Thermoid Div., H. K. Porter Co., Inc., 200 Whitehead Rd., Trenton 6, N. J.
Trippe Mfg. Co., Trippelite Div., 133 N Jefferson St., Chicago 6, Ill.

U

U-C Lite Mfg. Co., 1050 W. Hubbard St., Chicago 22, Ill.
United States Rubber Co., 1230 Ave. of the Americas, New York 20, N. Y.
Universal Fire Apparatus Corp., P. O. Box 187, Wheatland Ave. & Center St., Logansport, Ind.
University Loudspeakers, Inc., 80 So. Kensico Ave., White Plains, N. Y.

V

Valley Fire Truck Co., 59 Tuscola Rd., Bay City, Mich.
Vonnegut Hardware Co., Von Duprin Div., 402 W. Maryland St., Indianapolis 25, Ind.

W

Ward La France Truck Corp., Grand Central Ave., Elmira Heights, N. Y.
Washington Products Co., 240 S. Fayette St., Washington Court House, Ohio
Waterous Co., 80 E. Fillmore Ave., St. Paul 7, Minn.
Waukesha Motor Co., St. Paul Ave., Waukesha, Wis.
W-B Manufacturing Co., 157 No. Wasco St., Wichita, Kans.
Wentworth-Forman Co., Inc., 116 Bedford St., Boston 11, Mass.
Western Anesthesia Equipment Co., Inc., 2333 Middlefield Rd., Redwood City, Calif.
Wheeler Protective Apparel, Inc., 224 W. Huron St., Chicago 10, Ill.
Whelen Engineering Co., Inc., 42 Kirtland St., Deep River, Conn.
Wincharger Corp., subs., Zenith Radio Corp., E. 7th & Division Sts., Sioux City, Iowa
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Y

Young Fire Equipment Corp., 1548 William St., Buffalo 6, N. Y.

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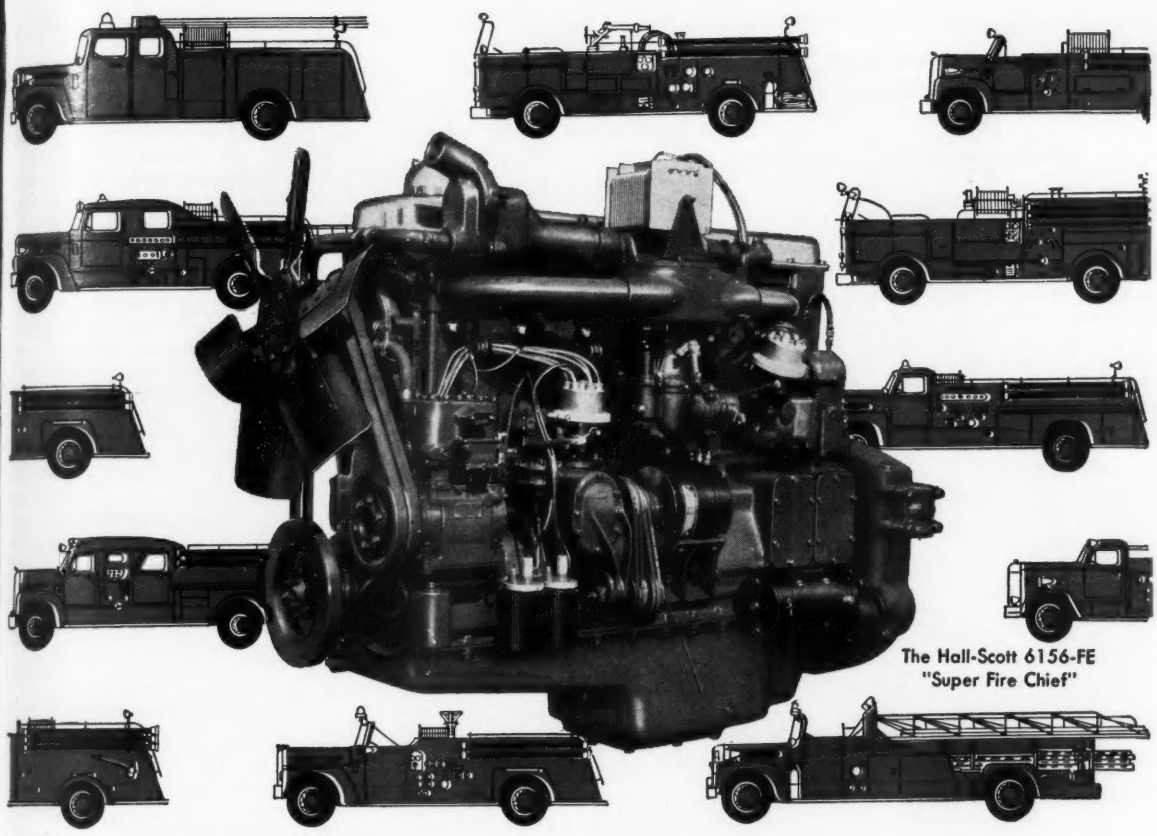

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Hall-Scott engines have established a reputation with fire prevention officials nationwide. Noted for their dependability and power, Hall-Scott engines give users the plus value of simple and economical overhaul through overhead camshaft construction.

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HERCULES MOTORS CORPORATION
Canton, Ohio

Questions and Answers

Horizontal Range

To the Editor:

How is the reach of a fire stream calculated?

N. B.

Answer: Maximum range of a stream when the nozzle pressure is greater than 30 psi may be calculated with satisfactory results by the formula S=½N.P. +26. The above is for use with a ¾-inch nozzle where S equals the horizontal distance in feet and N.P., the nozzle pressure in pounds per square inch. Add 5 feet to the 26 for each ⅛-inch increase in nozzle diameter.

Example: What is the maximum range of a fire stream when a 1-inch nozzle is employed at 50 psi?

S=25+26+(2×5)
=25+26+10
=61 feet

(*See "Fire Service Hydraulics," page 171.*)

Sprinkler Calculations

To the Editor:

What is the method used for calculating discharge from a sprinkler head and for supplying sprinkler systems during a fire?

H. P.

Answer: Discharge from a sprinkler head may be computed with comparative accuracy by the formula Q=½ P+15, where Q is the discharge in gallons per minute and P the pressure in pounds per square inch at the head. For example, if the pressure is 20 psi, the discharge will be Q=½×20+15, or Q=25 gpm.

The use of the formula is excellent for determining required quantities to supply a building system during pre-fire planning. However, a simple procedure for use during an actual fire is recommended. A pumper is connected to the fire department siamese and a pressure of 150 psi is maintained. The pump operator then notes the tachometer during the fire, and if excessive engine speed is required to maintain the pressure, it signifies a second pump is necessary to supply the number of heads which have opened. No further calculations are necessary.

(*See "Fire Service Hydraulics," page 188;* FIRE ENGINEERING, *page 552, July 1958; NBFU Bulletin 270.*)

Ladder Mounting

To the Editor:

Should the heel plates of a 24-foot ladder carried on the side of a pumper extend toward the rear of the apparatus or to the front?

K. S.

Answer: Carrying a ladder on the side of a pumper is usually a matter of original mounting design, custom and regulations of the department concerned. Safety to the men riding on the vehicle is, however, an important consideration.

If the ladder projects beyond the side grab rail, it may be a better practice to place the heel plates in a forward position. This may possibly prevent injury to the men riding the tailboard in case of sudden stops and hard bumps while the apparatus is in motion. If there is no projection, then custom or regulations will dictate the method. □□

Right to Join Union Upheld In California

California's Attorney General Stanley Mosk in a recent ruling has sustained the right of firemen to join a labor union. Mosk said the State Labor Code gives firemen the right to organize and engage in collective bargaining but not to strike.

Members of the San Diego Fire Fighters Association Local 145 of the International Association of Fire Fighters, AFL-CIO, sought the ruling to clarify Labor Code provisions particularly as they apply to chartered cities.

Mosk held that the code provision guaranteeing fire fighters the right to organize prevails over local restrictions prohibiting unionization.

Roi B. Woolley

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REVOLVING LIGHT gives you all these advantages

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(1) It is the strongest hose on the market because multi-woven. 600 lbs. test pressure.
(2) It is completely mildew-resistant, never needs drying out.
(3) Strongest resistance to abrasion.
(4) The cover can never cause internal chafing.
(5) Accidental punctures caused by sharp objects can be easily detected and plugged.

Proof of the superiority of Eureka is attested by the fact that certain fire departments use this hose exclusively. For example, one large Southern city has been using Eureka for 40 years. A large city in the north Middle West has been using Eureka since 1914; the only other brand this city uses is there for comparison of performance only. Eureka Multi-Woven 100% Dacron "Super Paragon" Fire Hose is equally at home in frigid climates or in damp, tropical climates.

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- Fire Apparatus Pumps
- Physics and Chemistry of Fire
- Methods of Extinguishing Fire
- Fog
- Foam and Fog-foam
- Wetting Agents
- Dry Chemical
- Fire Streams
- Automatic Sprinklers
- Standpipe Work at Fires
- Utilizing Capacity of Hydrants
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- Forcible Entry
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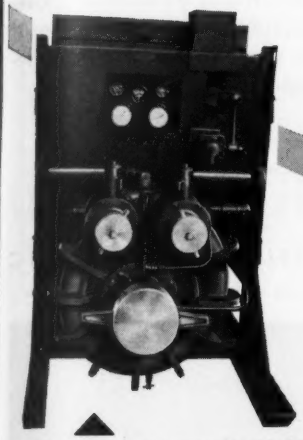
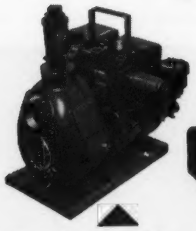
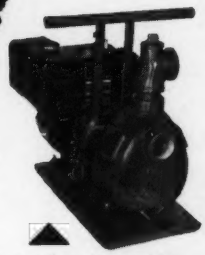


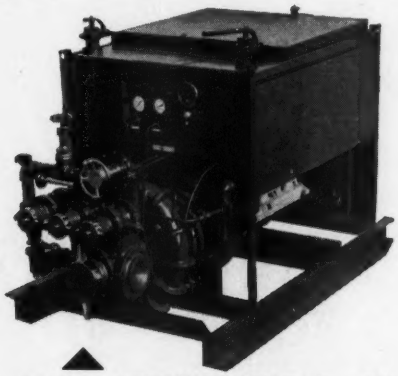
Type CFS—Skid mounted; pumps 500 U.S. GPM at 150 lbs. Also available mounted on trailer.



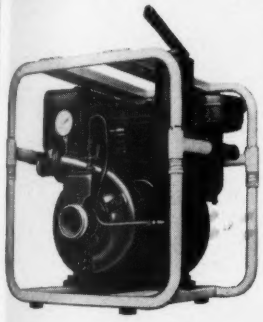
The 20-T "Torrent"—A compact, rugged and built-to-last unit. Pumps 7,000 GPH. Easily carried by one man.



The 25-T "Torrent"—A self-priming, portable pumping unit for construction, industry and general utility. Pumps 10,000 GPH.

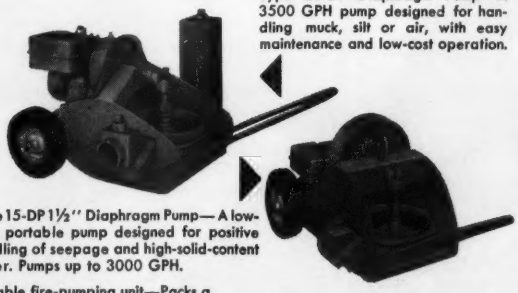


Type CLF-V—A RUGGED, POWERFUL Unit. Pumps 750 GPM at 150 lbs. with ample reserve. Also available trailer mounted.

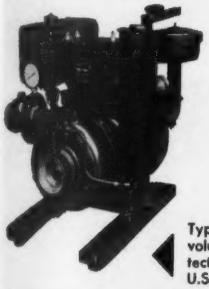


Type FZZ portable fire-pumping unit—Packs a pressure punch. Lightweight yet pumps 60 U.S. GPM at 90 lbs. Protective wrap-around frame with fold-away carrying handles.

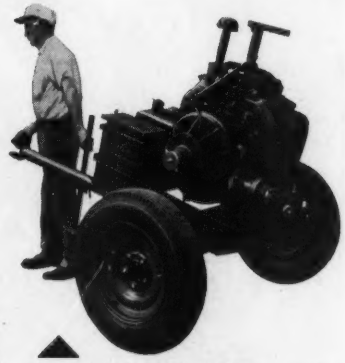
Type 20-DP Diaphragm Pump—A 3500 GPH pump designed for handling muck, silt or air, with easy maintenance and low-cost operation.



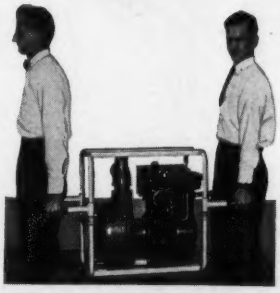
Type 15-DP 1½" Diaphragm Pump—A low-cost, portable pump designed for positive handling of seepage and high-solid-content water. Pumps up to 3000 GPH.



Type FZ portable fire-pumping unit—Packs a volume punch. Available on skids or in protective wrap-around frame. Pumps up to 300 U.S. GPM at 18 lbs.



Type WF—Designed for forestry service, industrial fire protection, and general utility pumping. Skid or trailer mounted. Pumps up to 150 U.S. GPM at 100 lbs.



The 30-T "Torrent"—All-around use for moving high volumes of water fast. Pumps up to 20,000 GPH. Shown here in protective wrap-around, two-man carrying frame.

No matter what your pumping needs are, there's a HALE pump to do the job *and do it right*. Hale fire pumps can be found on anything from the gigantic pumpers in the country's largest cities to fire-fighting jeeps in the back woods. Every type of Hale fire pump is custom designed for a specific use. Because of this, every Hale pump will give you RELIABILITY plus better service, efficiency, and long wear with less maintenance cost.

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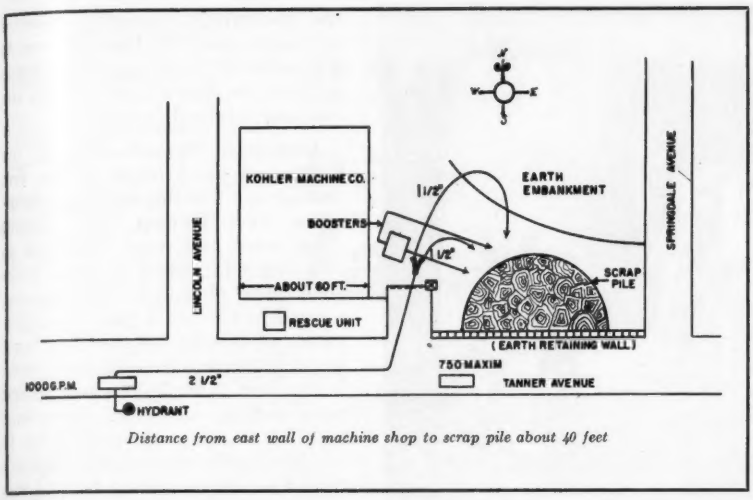
SCOTCH•SHIELD BRAND ALUMINIZED FABRIC



Distance from east wall of machine shop to scrap pile about 40 feet

Steel turnings pose unusual fire problem for volunteers

By ARTHUR L. KUMME

A MACHINE SHOP scrap pile blaze in Hatboro, Pa., gave the Enterprise Volunteer Fire Company an exciting fire problem on June 9, and has caused much comment in local fire circles. The odd fire at a local industrial plant also stimulated some research on methods of extinguishment.

At approximately 9:15 p.m., an alarm was received for a fire in a scrap pile at the Kohler Machine Works at Springdale and Tanner Avenues. Three engines and a light rescue unit under the command of Deputy Chiefs Hambrecht and Shiles responded.

On arrival, peculiar blue flames, tinged with green, could be seen rising from a 14 x 14 x 12-foot-high pile of machining chips about 40 feet from the shop buildings. The first pump was backed into the driveway between the buildings and the burning scrap pile, and the men were ordered to stand fast while Chief Hambrecht ascertained the contents of the burning mass.

No magneium in pile

Having satisfied himself that there was no magnesium or similar metals within the pile, Chief Hambrecht ordered the initial attack on the burning steel chips using two 1-inch booster lines operated at the top of the pile. Application from the booster lines seemed to slightly accelerate the fire and drive flammable gases out around the two hose crews where they ignited with minor explosions. Since extinguishment could not be obtained and the men were being endangered, both lines were ordered withdrawn.

Deputy Chief Shiles had by this time arrived with the second and third pumps and, after a brief conference between Shiles and Hambrecht, one truck was ordered to stretch a 2½-inch line with a water thief and two 1½-inch leader lines. One 1½-inch line was placed on an embankment overlooking the burning pile of steel from which vantage point a solid stream was played on the fire. The second line was placed at one side at the bottom of the pile to throw a fog curtain between the fire and the men who were pulling the pile open with pike poles. Because of continued minor explosions, both from within the pile and outside the pile, Chief Shiles ordered all of the working crew to reverse their helmets and pull their bunker coat collars up to shield their faces.

Opening up the pile of burning steel revealed a semisolid glowing mass of metal and some small pools of liquid metal with it. The clinker-like mass was about 4 feet thick and lying about 3 feet down from the top of the pile. Anticipating steam explosions upon the application of water, Chiefs Shiles

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Many airport departments have equipped their entire force with "Scotch·Shield" Fabric garments. However, two suits are providing basic "starter" protection for other departments. Approach and proximity jobs can be performed with reflective hoods, bunker coats and pants, and gloves—rescue jobs with complete "entry" suits.

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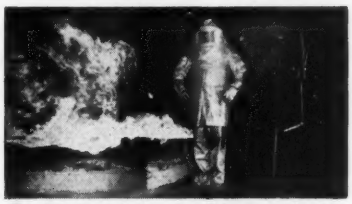
SCOTCH·SHIELD BRAND ALUMINIZED FABRIC

It's a fabric made of pure aluminum vapor-coated on lightweight rayon, asbestos, or glass cloth. Its bright aluminum finish reflects 90% of radiant heat. "Scotch·Shield" Fabric is extremely flexible and resists stress or tearing, won't peel or crack. Durability far exceeds other fabrics given equal heat exposure. It produces reflective-protective garments lighter than conventional bunker clothing—it eliminates the need for bulky insulation type gear. Return the coupon for literature describing "Scotch·Shield" Fabric and its uses in firefighting.



Try this heat test . . . within seconds the conventional bunker coat smoldered . . . "Scotch·Shield" Fabric garment protected for the duration of the 100 gallon spill fire!

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and Hambrecht personally, directed and supervised both hose streams. At approximately 11:00 p.m. Chief Shiles declared the fire out and ordered the company returned to quarters.

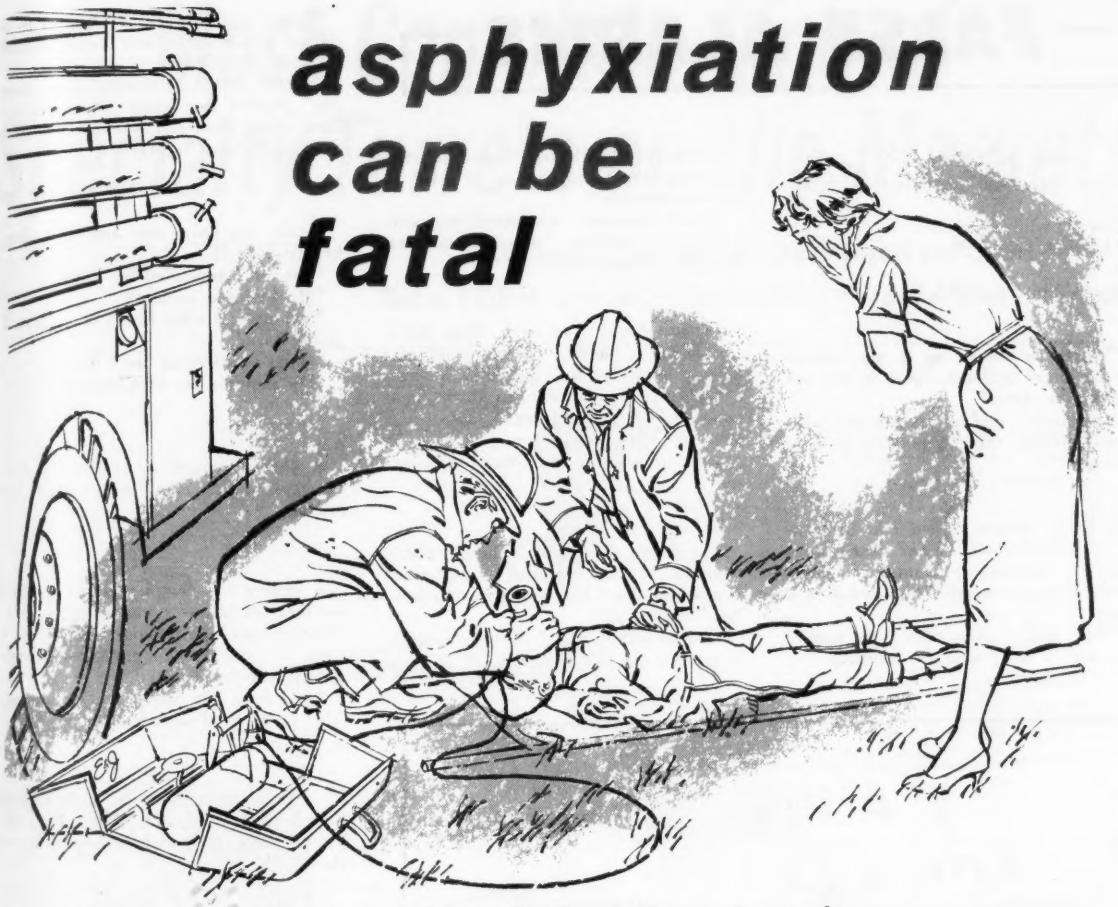
Because of the odd color of the flames and the behavior of the fire, and the fact that the steel chips themselves were burning, both deputy chiefs were very much interested in obtaining information as to the probable source of ignition; why burning seemed to accelerate upon the application of booster streams; and what gas or gases were given off that ignited in the form of explosions and burned with such an odd color. There was some divergence of opinion as to whether the fire was ignited by a spark from a nearby incinerator landing in a residue of cutting oil or whether the fire was the result of spontaneous ignition and auto-acceleration.

Rapid oxidation

A metallurgist was consulted and, in his opinion, a spark could not have ignited residual cutting oils because these generally require relatively large amounts of heat for sustained periods and the residue would be so small as to prevent self-propagation of the fire. In the opinion of the metallurgist, sulfur traces were leached out of the residual cutting oils and gradually found their way into the heart of the scrap pile. Here, the oxidation of the finely divided steels was fairly rapid and used so much of the air that was present, that little heat loss developed. The sulfur traces combined with the hydrogen in the water moisture to give sulfuric acid which further accelerated oxidation. These happenings caused sufficient heat to ignite the iron oxides and the entire central mass became involved. The application of water from the booster lines carried additional oxygen to the mass and accelerated the combustion rather than retarding it because the relatively small amounts of water did not diminish the positive heat balance.

It was also pointed out that, if aluminum scrap was present in the pile, the total reaction, once ignition started, would be like that of thermite. This would account for the temperatures of approximately 3,000° F. which were necessary for the small pools of molten metal which were found in spots in the semisolid clinker. The metallurgist was also of the opinion that the color of the flames and the peculiar explosive actions indicated relatively large amounts of carbon monoxide and steam explosions, when water reached the high-temperature mass. ☐☐

asphyxiation can be fatal



. . . unless rescue breathing is started immediately. A life may be saved even when breathing has stopped if mouth-to-mouth breathing is started to sustain life *until* the E & J® Resuscitator with life-saving oxygen arrives.

The E & J will get oxygen into the victim's lungs despite partial blockage, and breathes automatically for the patient until normal breathing can be restored.

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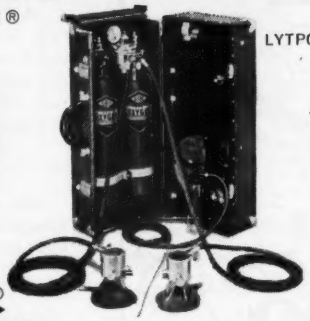

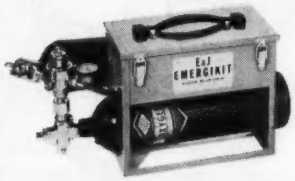

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FALSE ALARMS

Realist

Man: "Son, will you direct me to the bank?"

Boy: "I will—for a dollar."

Man: "A dollar! That's high pay, isn't it?"

Boy: "Not for a bank director."

"What you are saying to me," shouted the angry husband, "goes in one ear and out the other."

"Of course," replied his irritated wife, "that's because there is nothing in there to stop it."

A Texas oilman gushed into his dentist for an examination. The dentist dove into the oillionaire's mouth and said, "Perfect, man, perfect! You don't need a thing."

"Well, drill anyway, Doc," the patient drawled, "I feel lucky this morning."

"And now, gentlemen," continued the speechmaking Congressman, "I wish to tax your memory."

"Good heavens," whispered one colleague to another, "why haven't we thought of that before?"

License clerk: "I'm sorry, Miss, but I can't issue a marriage license until you have a properly filled out form."

Girl: "Listen, mister, this is the new pancake look, my boy friend likes it and wants to marry me, so you give me a license and keep your opinions to yourself."

The doctor came out of the old man's bedroom to the beautiful young wife. "Frankly I don't like the way your husband looks at all."

"I don't either, Doc," the wife replied. "I married him for his money."

"An unscheduled speaker. Seems someone locked him out of a hospitality room!"

"Paw," said the boy. I want to go to college and learn to be a doctor. I think I'll study obstetrics."

"Likely you'll be wastin' your time, son," replied the father. "Soon as you learn about obstetrics, somebody'll come along with a cure for it."

"I see you have your arm in a sling. Broken, isn't it?"

"Yes, sir," responded the other.

"Meet with an accident?"

"No, broke it while trying to pat myself on the back."

"Great Scott! What for?"

"For minding my own business."

A chance remark is anything a man manages to say when two women are talking.

A mother was complaining to her doctor that his bill was unreasonably high. "Don't forget," he reminded her, "That I made 11 visits to your home while your son had the measles."

"And don't you forget," she countered, "that he infected the whole school."

We never used to be able to find Grandmother's glasses, but now she leaves them right where she empties them.

Psychiatrist: "Did the treatments help you to stop worrying?"

Patient: "They did until I got your bill."

Projection

The Old Timer was sitting at a bar busily scribbling figures on some paper. The bartender was curious and asked what he was doing.

"Well, itsh like thish," said the lush. "My wife ish on a diet and she tol' me she'sh losing four pounds a week. She did weigh 168, and if my figures are correct, I'll be rid of her completely in 14 months."

Sign in an engine company kitchen: The silver is not medicine. Don't take it after meals!

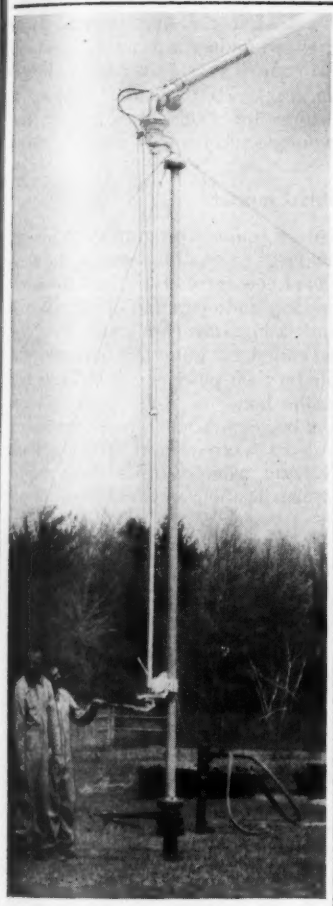
Father: "Yes, son, I'm a self-made man."

Son: "Dad, that's what I like about you. You take the blame for everything."

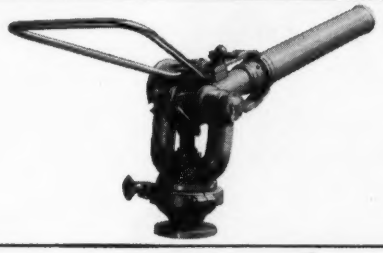
The best after-dinner speaker is the fellow who says: "Waiter, bring me the check."

Most Complete Line of Specialty Turrets on the Market!

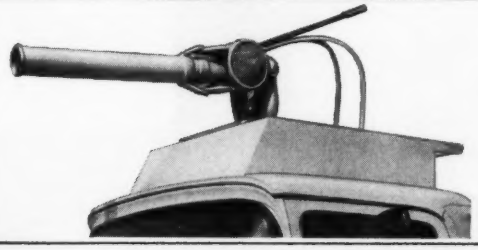
...All Rockwood Turrets Discharge FogFOAM
Solid FOAM Stream — WaterFOG — Solid Water Stream



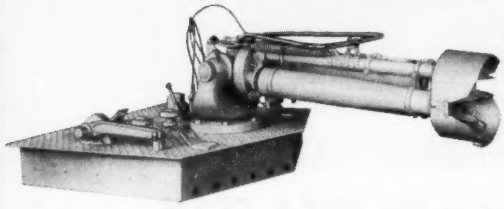
Extended Manual Control Type — Turret nozzles extend 10 to 20 feet above remote control station on deck or ground on standard units ... greater remote extensions for special applications.



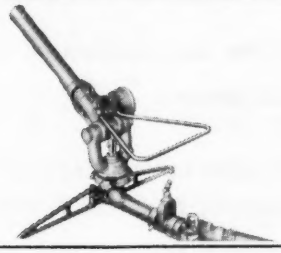
Direct Manual Control Type — Gives fire fighters "out-in-the-open" control from cab roof!



Remote Manual Control Type — Easily handled by man in driver's seat. Ideal for fast action!



Remote Hydraulic Control Type — Power-controlled from within the cab. Single and dual models. Widely used on air crash rescue fire-fighting trucks.



Portable Type — Off the truck and into action in seconds! Goes wherever a fire fighter can bring the proper hose line into action!

On the truck or on the ground, fire fighters can hit fires *harder* using ROCKWOOD Turrets! At airports and refineries ... in municipalities and throughout industry ... these advanced-design fire-fighting aids are constantly proving their ability to extinguish fires faster.

ROCKWOOD Turrets provide plenty of volume *and* versatility. What's more, all are easily adjustable on the fire line to meet changing fire conditions. Produced by the world's largest manufacturer of specialty Fire-Fighting Turrets, they're designed to give fire fighters an extra edge of efficiency on most types of fires. Get full details on the complete line of fire-fighting products. Write ROCKWOOD SPRINKLER DIVISION, Portable Fire Protection Division, 442 Harlow Street, Worcester 5, Massachusetts.

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Stop and see us for the latest equipment designed for your safety.

WHELEN ENGINEERING COMPANY, INC.

42 Kirtland St., Deep River, Conn.

INDUSTRIAL FIRE TRAINING

Continued from page 707

vent any hardships to management, the instructors take their training aids to the place of business and conduct classes there. Where they have three shifts working, the members of the brigade on the midnight to 8 a.m. shift have been held over for a two-hour training course from 8 a.m. to 10 a.m. For the shift working from 4 p.m. to midnight, classes have been held from 6 p.m. to 8 p.m. and 8:30 p.m. to 10:30 p.m., thus making it possible for every member of the brigade to receive his training.

Subject matter

In all training programs, no matter how large or small the group, the subjects of chemistry of fire, and the care, handling and operation of all types of hand extinguishers are given. Also, fire prevention measures are covered not only for their place of employment but for the home as well. After lectures have been given, the groups are taken outdoors where actual fires are built involving materials of the three different classifications of fires. Members of the class are called on to select the proper extinguisher for that particular fire and then proceed to extinguish it in the approved manner, under supervision of the instructor.

Refresher courses

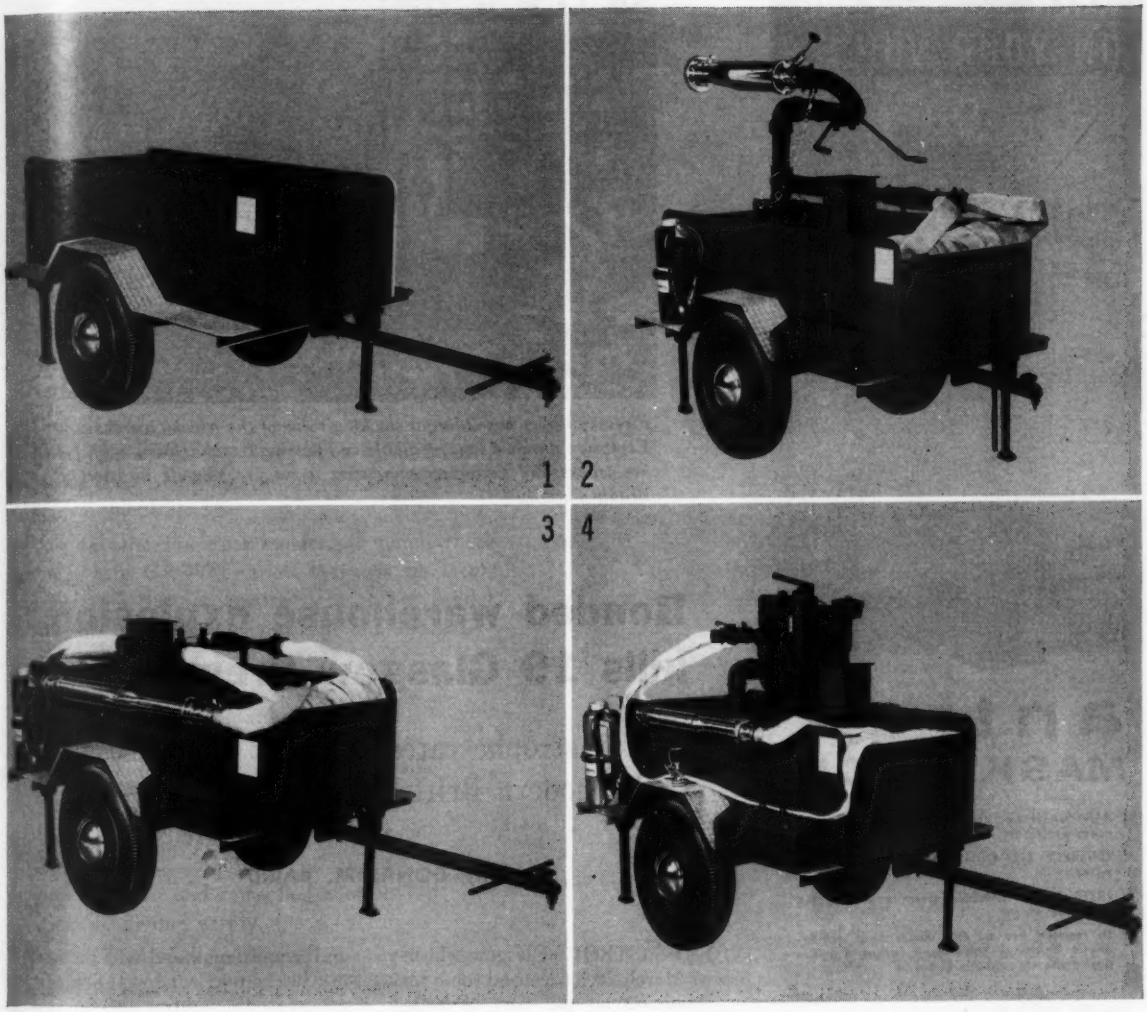
Due to the infrequent use of the fire fighting equipment, the fire bureau recommends that brigade members be given a refresher course at least every two years. This recommendation has been well received by management and there are many repeats each year. In instances where the hazards are great, the refresher courses are given annually. Some plants have fire bureau instructors at eight of their monthly meetings during the year.

Records are kept of attendance and subjects taught at every class. The following figures indicate the increased interest in the program since the formal program was instituted in 1957.

Year	*No. of persons instructed*
1955	369
1956	400
1957	1,184
1958	2,134
1959	2,824

Because the majority of the organizations have only soda-acid, pressurized water, foam, carbon dioxide or dry chemical extinguishers, the following is a typical two-hour program given such groups:

Continued on page 768



the most fire protection ever carried on two wheels!

Need an inexpensive utility trailer built to meet specific needs? National Foam has it!

Here's a versatile, variable vehicle designed so that it can be custom-equipped to fit the requirements of any user . . . industrial, municipal, or volunteer.

Your choice of tank capacity: 100 gallons or 150 gallons. Extendable drawbar makes it easy to pull by hand. There's also a ball-and-socket hitch for towing. Capacious bins, for fire hose or accessories, are built-in fore and aft.

Think how this basic cart (Photo 1) adapts easily to special needs: (Photo 2) Add a monitor-mounted PW-50 Nozzle, with line proportioner. With Aer-O-Foam Liquid in the tank and 150-pound pressure from hydrants, you can throw a 4000 GPM foam stream as far as 180 feet. You can pump foam steadily as long as 10 to 15 minutes. Add a tool box and dry chemical extinguishers and you're equipped to combat a wider range of fires.

(Photo 3) If manually operated nozzles are preferred, mount two RP-12 Nozzles, connected to suitable line proportioners. This same foam cart also serves as a source of foam liquid for foam chambers on small storage tanks.

(Photo 4) Use the tank for water, add a gasoline-powered pump, and draw Aero-O-Foam Liquid if needed from 5-gallon containers carried in the cart's storage bins.

Maybe your situation calls for still another variation . . . including many outside the fire protection field, such as weed killing. National Foam's engineers are ready to help with specifications and designs. Send your inquiry today.

National Foam System, Inc.

West Chester, Pa.

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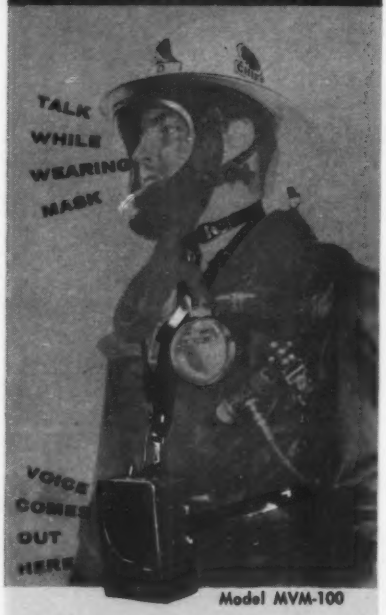

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Ideal for emergency, fire, rescue and training. Weighs only 2 lbs. Projects wearer's voice up to 100-ft. distance during extreme noise conditions—up to 400 ft. under normal conditions. Throat microphone operates whether face mask is worn or not—or is adaptable for attachment through mask face-piece.

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Six models; 3 to 25 watts. Ranges: up to ¾ mile. Microphone built in, as shown, or external for clip-on or hand use, with 5-ft. extension coil cord. All-transistor; powered by pen-light or rechargeable batteries.

ANTREX *Mask Voice* at all outlets of American La France Co.; Hirsch Fire Equipment; other safety, fire, police and industrial distributors; or direct from *Antrex*.

ANTREX Power Megaphones available from above distributors, or direct from *Antrex*.

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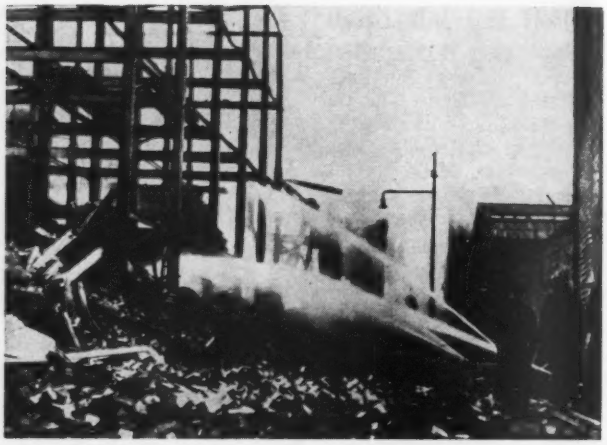

Firemen direct hose lines at smoking ruins of the whisky warehouse. Explosion dumped tons of rubble and flaming scotch whisky on three fire trucks and their crews creating worst fire brigade disaster in Britain's history

Bonded warehouse explosion kills 19 Glasgow firemen

Catastrophe rates as worst single fire in modern British history

By DONAL M. BAIRD

THE DISASTROUS Glasgow whiskey fire of March 28 has caused some serious thinking on the part of British fire authorities. The loss of 19 firemen's lives and Britain's largest peacetime property loss have demonstrated that a lethal fire potential exists in whiskey storage. Information is meager on just what happened when a violent explosion blasted out the end walls of a six-story bonded warehouse, but the evidence seems to point to the huge stocks of raw whiskey for both the explosion and the intense conflagration which followed.

The wartime blitz has frequently been mentioned in descriptions of the fire, but not even the worst of the blitz fires took as many fire fighters' lives as this calamity. The magnitude of the property and life loss make the Glasgow fire possibly the worst single fire in Britain since the Great Fire of London in 1666.

Government and fire officials are now pondering the many big storage facilities maintained in connection with Scotland's most famous industry. These are often in very old buildings in the congested dock areas of ports, and in customs bond with its customary bricked-up windows. Difficulty of access for fire fighting and fire prevention inspection are prominent features of them.

Wide interest in the fire was heightened by the fact that it closely followed two other serious fires within a month involving whiskey storage in Glasgow. This gave rise to a suggestion of arson, but no evidence has been brought forward. The two earlier fires were in dock sheds only incidentally containing whiskey.

In the third fire, a violent explosion and falling walls during the early stages killed 14 members of the Glasgow Fire Brigade and five men of the Salvage Corps operated by the insurance interests. Another 40 persons were injured during the fire. An early estimate of the property loss was from $7 to $14 million. The inventory of these whiskey stocks is such that it will take a long time to establish the loss.

The buildings involved consisted of four contiguous six-story brick buildings with timber interiors and cast iron

Continued on page 792

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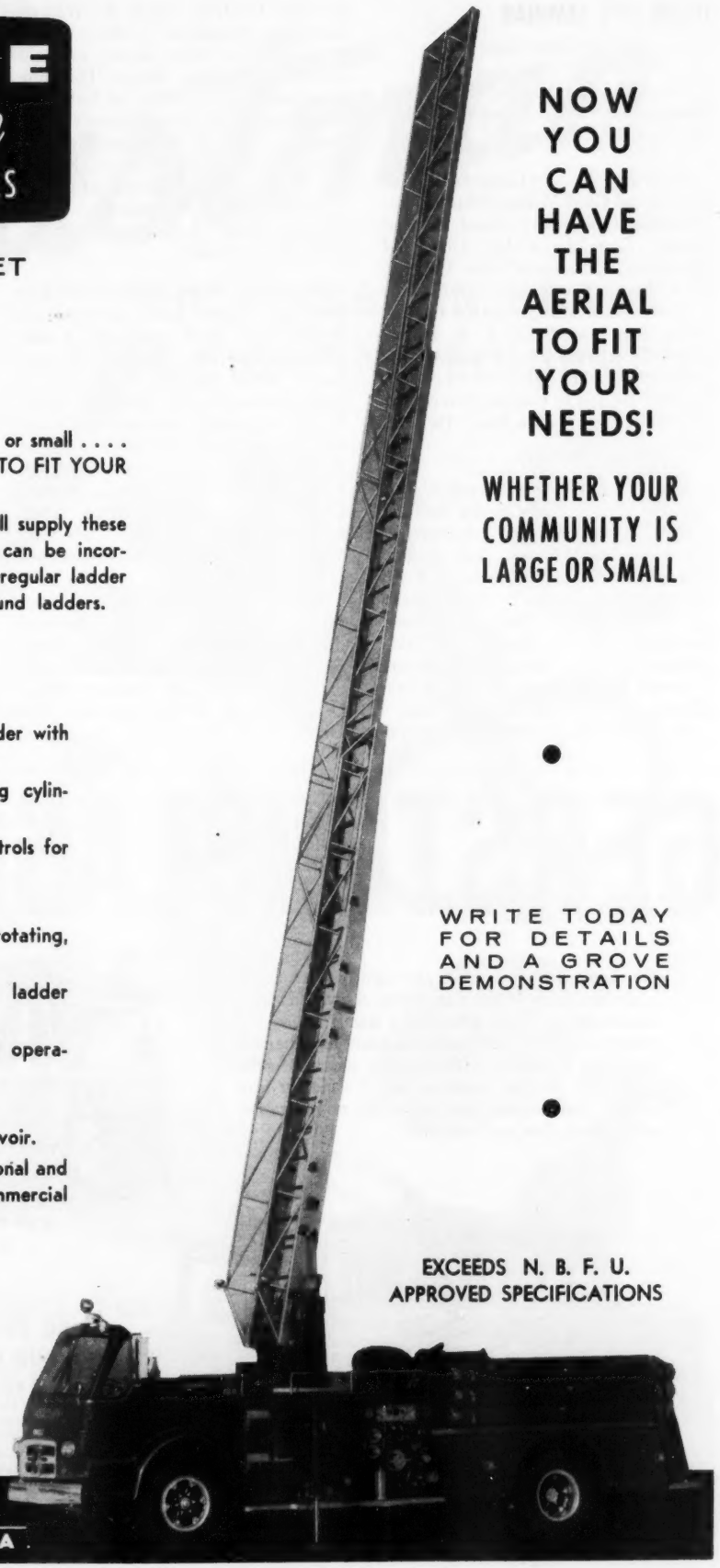

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OCDM FIRE SEMINAR

Continued from page 729

CD director, Los Angeles County and secretary, U. S. Civil Defense Council, Region 7.

Workshop No. 3—Large-Scale Fire Operations: Chief William Murray, San Francisco (chairman); Chief Edward Aiman, Glendale, Calif., Chief Al Spaulding, Division of Fire Control, U. S. Forest Service, Portland, Ore.; A. Russell Lunsford, assistant CD director, San Jose, Calif.; C. R. Patrie, area forester, Bureau of Indian Affairs, Gallup, N. M.; Jesse McLendon, OCDM, Region 8; Captain Davis, San Jose CD Office; Calvin Maus, OCDM, Region 7.

Workshop No. 4—Phenomena of Fire Behavior: Chief Charles N. Carrell, Santa Monica, Calif. (chairman); Chief C. D. Williams, Las Vegas, Nev.; Leo Weidner, Bureau of Fire, Portland, Ore.; Sim E. Jarvi, forest supervisor, Angeles National Forest, Pasadena; E. C. Iverson, OCDM, Region 7; John Mahoney, forester, National Park Service; Deputy Chief Charles Bahme, Los Angeles, Calif.

Workshop No. 5—Problems related to Fire Control: Chief T. William Heidner, Pasadena, Calif. (chairman); George Rich, deputy assistant director, OCDM: Henry Thurston, assistant director, Office of Industrial Relations, U. S. Atomic Energy Commission; Chief W. K. Blaisdell, Honolulu, Hawaii; David Kyle, U. S. Forest Service, Utah; Joseph Micciche, CD director, Los Angeles, Calif.; Deputy Chief Leonard V. Foster, Long Beach, Calif.

Workshop No. 6—Research for Fire Defense: Loren Bush, president, NFPA and chief engineer, Pacific Rating Bureau, San Francisco (chairman); Keith Arnold, director, California Forest Service, Berkeley; Keith Royer, supervisor, firemanship training, Iowa State University; Chief Keith Klinger, Los Angeles County; Chief Harold Fisk, Tacoma, Wash.; Lloyd Hague, Forest Service, Intermountain Region, Ogden, Utah; Carl Weers, assistant chief, National Board of Fire Underwriters.

Acting as roving advisors were Barent Landstreet, deputy assistant director, Community Services Office, OCDM; John J. Fitzpatrick, deputy director, Community Services Office, OCDM; Frank McNea, director, Fire Division, Community Services, OCDM; and Chief Henry Thomas, National Board of Fire Underwriters consultant.

Chief Thomas also acted as coordinator-chairman for the workshop reporting session held on the final day of the seminar. Immediately following the adjournment of the workshops, Chief Keith E. Klinger directed all present through a demonstration of fire line feeding using field techniques. A review of Los Angeles County fire apparatus and equipment then followed and was climaxed by a helicopter water drop and hose laying demonstration.

Three subsequent seminars will be held in Ames, Iowa, with Iowa State University as host, August 9-11; at Memphis, Tenn., with the City of Memphis as host, August 23-25; and at College Park, Md., with the University of Maryland acting as host, on October 4-6. □□

Roseburg Rebuilds

At an election on May 20, voters of Roseburg, Ore., approved a bond issue of $198,000 for rehabilitation of the area blasted in the catastrophe of last August 7. Another issue for $50,000 was approved for an aerial platform truck and other equipment for the fire department.

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No standard rescue unit is just right for every local situation. Each department must analyze its own requirements before planning a rescue squad operation. Gerstenslager sales-engineers have helped hundreds of communities develop the most efficient unit for the needs at hand . . . and for less money. This service puts you under no obligation whatsoever. Can we help you?

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Heavy duty Firecoat made of tough jeans fabric, coated inside and out. Storm fly front with rapid action snap - and - dee fasteners. Patch pockets. Full corduroy collar with throat tab. Sleeves are plain or finished with pure gum cuffs or knitted wool wristlets.

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Siren short bunker boot, side loops for easy on and off.

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INDUSTRIAL FIRE TRAINING

Continued from page 762

Inside lecture and demonstration:
- Calling fire department
- Value of training
- Fire prevention methods at places of employment, also in the home
- Chemistry of fire
- Classification of fires
- Methods of extinguishing
- Care, handling and proper operation of the various types of extinguishers
- Handling and operation of standpipe hose
- Safety measures
- Question and answer period

Outside demonstrations
- Actual fires are simulated representing the three classifications of fires
- Members are picked from the group to select the proper extinguisher for the type of fire that is burning, then extinguish it in the proper manner.

Question and answer period

Where brigades have ladders, drills are conducted in the carrying, placing, raising, climbing and lowering. For those having hose houses, members are taught the single and double hose roll, how to make and break couplings and how to advance lines on the ground and up ladders. Hose lines are charged and each man is taught how to operate the nozzzle.

Some plants are equipped with breathing apparatus, in which case the staff prefers to give instructions at the fire academy. The fire fighting house, a three-story building which can be completely charged with smoke, is employed and brigade members receive experience wearing breathing apparatus under actual fire conditions.

If tarpaulins are provided for salvage work, these groups are given instructions in folding, carrying, spreading and maintenance. Instructions are also given to groups which have special appliances such as foam generators, fog applicators, bayonet nozzles, etc. In all classes, safety of the members and occupants of the building is stressed.

The fire bureau does not expect the trained personnel to extinguish all fires. However, with the knowledge gained, the brigades should be able to extinguish incipient fires, or to a certain degree confine a fire to a small area and hold it until the city fire department arrives. Experience to this date indicates the entire project is a subject which any fire department should investigate in the interest of sound fire protection. □□

Fire-fighting vehicles which must keep on fighting call for . . .

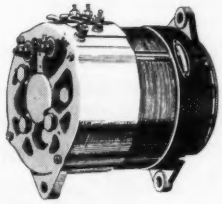
DELCO-REMY HIGH-DUTY ELECTRICAL EQUIPMENT

to supply the extra electric power they need

In all kinds of weather and for hours on end, fire-fighting equipment must be able to stay on the job. *Dependable* and *ample* electric power is a must for the extra-heavy demands of floodlights, two-way radios and other special electrical units with which modern fire-fighting vehicles are equipped.

Delco-Remy high-duty d.c. or self-rectifying a.c. generators assure the extra electrical power needed in such service. Their special performance characteristics keep electrical accessories working at top efficiency. Delco-Remy high-duty generators with matching regulators protect batteries against excessive discharge and cycling effects. Batteries stay charged, and last longer.

Be sure to specify Delco-Remy high-duty electrical equipment, including the new longer life Delco batteries, on the new vehicles you order, and when you re-equip present ones. Both 6- and 12-volt a.c. and d.c. systems are available.



Model 1117122 is a Delco-Remy 12-volt self-rectifying a.c. generator widely used on fire-fighting vehicles. This dependable unit can provide up to 40 amperes at engine idle with a maximum output of 125 amperes. A.C. voltage available for 110-volt conversion.

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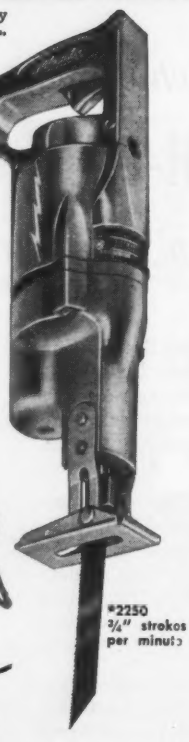
Act now to equip your fire, safety and rescue crews with SAWZALL. Be ready for every emergency or forcible entry need. **Write for Bulletin SW-6, Milwaukee Electric Tool Corporation, 5354 W. State St., Milwaukee 8, Wis.**



*2250 ¾" strokes per minute

Milwaukee SAWZALL

The ORIGINAL and FINEST Portable Power Hacksaw

REBUILDING A FIRE DEPARTMENT

Continued from page 695

ferred from control by the superintendent of fire alarm maintenance and placed under the direction of the fire chief. They were assigned to the same working system as other members of the fire bureau and salary adjustments and promotional possibilities were provided. The communication system was strengthened by installation of radios in all stations and on all apparatus, and all interfering-type fire alarm telegraph boxes were replaced with the modern succession type. Modernization of the dispatching center is now under way and when completed will handle all emergency calls for Rochester and Monroe County.

City officials and members of the city council have followed closely the several and various improvement programs within the fire bureau. With the vast changes made, it seemed logical to seek a supplemental survey by the National Board. In 1955, the fire services were surveyed again and the resulting improvement over 1950 is noted:

	1950	*1955*	*Improvement*
Fire department ...	541	131	410
Fire alarm	78	47	31
Fire prevention	97	86	11
Water supply	557	445	112
Police	15	4	11
Building bureau ..	50	38	12
Structural conditions	225	223	2
Climatic conditions .	82	82	0
Total	1,645	1,056	589

First in importance was the emphasis placed within the fire bureau itself. However, other improvement programs within the city reflect on the administration of the fire bureau too. High-density arterial highways in and around Rochester have replaced many fire hazards and these express arteries afford better response routes for fire apparatus. Rochester's comprehensive off-street parking program in the downtown area has resulted in the demolition of old fire-prone buildings which have been replaced with fireproof parking ramps. Our downtown redevelopment and rehabilitation effort has and will continue to replace older structures with those of modern construction. At the same time, new street construction necessitated changes in fire alarm circuits with resulting improvements.

These many facets of municipal administration posed new problems for the fire bureau. These problems, however, made city officials aware of the importance of closer cooperation between the several departments and bureaus and made them realize the ne-

cessity of keeping the fire bureau informed of proposed changes. Today the fire bureau works closely with members of the planning commission, engineers, rehabilitation commission and building bureau of the city. The scope of their operation goes even farther. It extends to representatives of county and state government and to the engineers in the hundreds of private industries within this area.

Accomplishments of the Rochester Fire Bureau which are detailed in this issue could not have been realized in so short a time if it were not for the deep interest of the corps of employees who worked so diligently with me—the officials of Rochester and the members of the city council. □□

New York City Abolishes Theatre Detail

Fire Commissioner Edward F. Cavanagh, Jr., stopped the assignment of New York City firemen to theatres, effective March 1. The practice had been followed for the past 40 years.

Each theatre using movable scenery was assigned to a fire company for coverage. Movie houses were not included. It was the responsibility of the covering company to detail a fireman to its theatre whenever a performance was scheduled. The fireman arrived at the theatre a half hour before curtain time, inspected and tested the alarm system, sprinkler and standpipe, exits and the asbestos curtain. He saw to it that the provisions of the fire prevention code regarding standees, smoking and the use of open flame were complied with. He was expected, in the event of fire or other emergency, to prevent panic and take the necessary action to control the emergency.

Under the new set-up, all theatres and movie houses will be inspected by the fire department for obvious fire hazards at least once weekly. In addition, complete cellar-to-roof inspections will be made twice a year and, in the case of legitimate houses, whenever a new show opens. In the past it has been impossible to inspect movie houses more than about once a year.

The fire department will train theatre personnel in fire prevention. While this training is not compulsory, Mr. Cavanagh has indicated that he expects all theatre owners to take advantage of it. He praised the owners for their cooperation in working out the new procedures. He noted that, while the fire prevention code permits the fire commissioner to assign firemen to theatres for fire safety, the responsibility for protecting audiences from fire and panic rests on the owners.

It is estimated that the new procedures will save the city $250,000 to $300,000 a year, and plug the manpower drain caused by covering matinee and evening performances in between 33 and 45 legitimate theatres.

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Among the Buffs

By Paul C. Ditzel

THE FOUR COFFEE wagons with mutual aid agreements in the Baltimore area have had a busy time lately, reports Henry G. Nathan, 3961 Brookhill Road, Baltimore, Md. Buff Nathan says a series of fires strained canteen facilities.

Here is the story as told by Brer Henry: "First, the Box 414 Association wagon started to a large grass fire for which two boxes had been struck and one special call transmitted. Just after this a second alarm was struck in the same general neighborhood for a fire in several row houses.

"The Box 414 wagon was diverted to the house fire and a call was put in for the Box 234 Association wagon in Pikesville, Md. The report came back, however, that this wagon was en route to an extra-alarm house fire in its own territory.

"Next, a call was placed for the wagon of the Central Alarmers of Towson, Md. While the 414 dispatcher was talking to the Central Alarmers' dispatcher, a second alarm was transmitted in Baltimore County which took the Central Alarmers' wagon. Next unit called was the wagon of the Anne Arundel Alarmers of Ferndale. Only then was it learned that this rig was in service at a large brush fire.

"At this point the 414ers alerted the canteen unit of the Red Cross which responded to the original large grass fire in Baltimore City. Meanwhile, the 234 wagon was returning from its house fire run and was ordered by radio to respond to the grass fire in Baltimore City and to relieve the Red Cross."

Buff Nathan says this was the first time since the mutual aid system was worked out among the four units that all have been in service at the same time. All four clubs, incidentally, are members of the International Fire Buffs Association.

"On April 20," Buff Nathan continues, "the mutual aid system was used again in Anne Arundel County, just to the south of Baltimore. The Anne Arundel Alarmers wagon was in action at a large grass and woods fire between Baltimore and Washington when in came a three-alarm fire in a shopping center in its home territory. The call was relayed to the Box 414 Association which responded with its wagon.

"This is the first time that the Box 414 wagon has responded outside of the city since the wagons were placed in service in the adjacent counties. Prior to these wagons being activated, Box 414 serviced the counties. On several occasions the wagons from the counties have assisted Box 414 on large fires or on simultaneous extra alarms in Baltimore City.

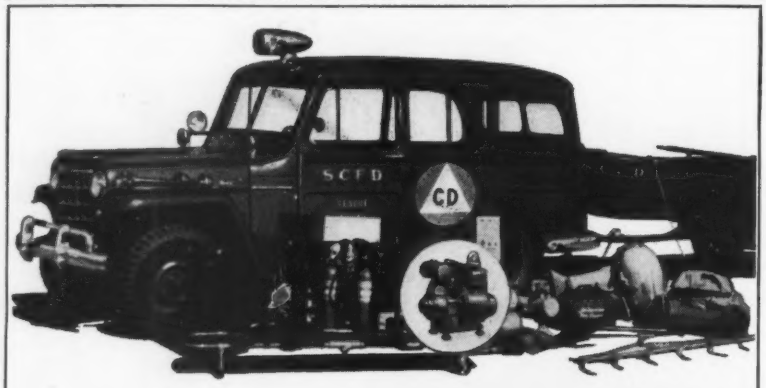
"Also, the Anne Arundel Alarmers are putting the finishing touches on a new bus which will replace its present coffee wagon. The new vehicle will be outfitted with a canteen wagon on the forward portion. A mobile hospital will be located in the aft section."

In Brooklyn, The Rev. William T. Walker of The 255 Fire Club, 1345 Rogers Avenue, sends along the sad news of the death of Buff Edmund A. Burchard. Buff Burchard was a veteran member of the club. Rev. Walker said Eddie died while standing in front of the quarters of Engine 281. Death was attributed to a heart attack. A high Mass of Requiem was offered in Eddie's memory on Saturday, June 4, in the Episcopal Church of the Epiphany.

From Chicago comes word via William K. Ryan of the Chicago Fire Fans Association, 209 South Jefferson Street, that Hy Levine and all other officers and directors of the CFFA were re-elected for a second year.

Speaking of Chicago recalls a most pleasant trip taken during the past few weeks to the scene of my early fire buffing days. While there I renewed my long-time friendships with the CFD b'hoys, but press of business (yes, I *do* have to work for a living) prevented me from visiting with too many of the city's very active fire fans.

I did have the opportunity, however, of taking in a 2-11 alarm in a four-story abandoned hotel. Marshal Jim Lahey saw to it that I also was given a bonus ride in the crow's nest of the 65-foot Snorkel which did yeoman duty at the blaze. Chief Jimmy Johnson and his civil defense stalwarts were much in evidence at the scene and I enjoyed visiting with them.



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Electric Plants • Air cooled Engines • Precision Controls

A few weeks earlier I was in San Francisco (this time on vacation) and spent some time with Chief William Murray who briefed me on the city's new triple combination pumper which will be powered by a turbojet engine. The friendly Phoenicians as usual unfurled the welcome flag and I joined the 10 a.m. Kaffe Klatch at Foster's and went on for lunch at the Sandab Hose Co. 1.

Veteran Buff Eddie Donohue, head of the Commercial Fire Dispatch, graciously saw to it that this butter and egg man from Smog Wilderness found his way around the Big City. Eddie, incidentally, recently celebrated his 69th birthday and was feted at the regular Friday meeting of the Sandab Hose Co.

That's the size-up again for this month. Please continue to send along your firemanicdotes to me at 4234 Don Diablo Drive, Los Angeles 8, Calif. A late letter from Paul Vaillancourt, No. 27602, P. O. Box 520, Walla Walla, Washington, says the recent writeup in this column brought him plenty of mail. He says he'd appreciate hearing from any buffs, especially those who might be able to send him photos of Ahrens-Fox pumpers. He's interested in front-end views. Paul says Smokestack Hardy, that intrepid ace buff from Baltimore has already "rung-in."

Texas Names Training Area after H. R. Brayton

Directors of the Texas A. and M. College System recently honored the late Colonel H. R. Brayton, pioneer in the training of Texas firemen, by designating the Texas Engineering Extension Service's new firemen's training area the "Brayton Firemen Training Field." Brayton, who died in 1957, began offering courses for the training of Texas firemen in 1930, while he was a member of the chemistry department staff at Texas A. and M. College.

Beginning the training program with less than 20 students, Colonel Brayton, before his retirement in 1955, saw the program expanded to an annual firemen's training school at A. and M., plus off-campus training courses that are statewide in scope. During his tenure as director of firemen's training for the Industrial Extension Service of A. and M., and later the Texas Engineering Extension Service, Brayton directed the training of an estimated 50,000 Texas firemen.

Billings Hires Civilian Dispatchers

The Billings, Mont., Fire Department has announced hiring three handicapped men to replace firemen now serving as dispatchers in the department's control center. The novel plan, believed to be the first of its type instituted by a Montana fire department, will free four firemen for combat duty. The new dispatchers are classified as civilian employees.

E. W. Fair

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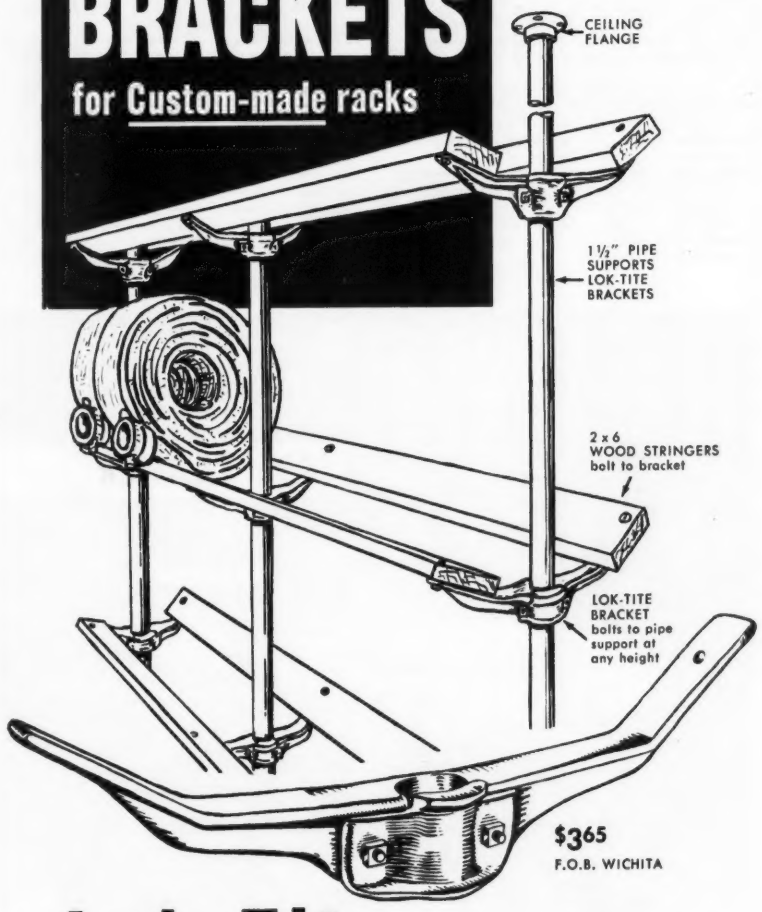
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What's Burning

THE FOLLOWING LIST includes fires of $10,000 and over in the United States and Canada for the period from June 17th to July 18th.

Anniston, Ala.—No. 2 shop of Rudisill Foundry destroyed. Ladle of molten metal overturned.
Birmingham, Ala.—W. M. Dunbar Co., Inc. warehouse practically destroyed.
Montgomery, Ala.—South Decatur St. building, housing Capitol Press, Inc., printing shop, Jeter TV-Service and Alabama Novelty Co., heavily damaged.
Phoenix, Ariz.—B & G Electrical Contractors warehouse destroyed.
Phoenix, Ariz.—Nearly completed Sunnyslope High School destroyed.
Benton, Ark.—KidDee Koral, children's clothing store, Parker's Drug Store and Tubb's Shoe Repair Shop, heavily damaged.
Endora, Ark.—Building housing cafe, drug store, barber shop, grocery and furniture store, destroyed.
Lafayette, Calif.—Dwelling of John P. O'Shea destroyed. Stray fireworks.
Los Angeles, Calif.—Wooden railroad bridge of Southern Pacific Railroad in Angeles National Forest, destroyed.
Palo Alto, Calif.—Office building under construction extensively damaged.
Sacramento, Calif.—Safeway Supermarket damaged. Refrigeration system exploded.
San Francisco, Calif.—Consumers Food Outlet Supermarket damaged.
Stockton, Calif.—Supermarket and five shops in Lincoln Village Shopping Center damaged.
Bridgeport, Conn.—Old Locomobile Building, housing Nicholas Panattieri Co., sport shirt firm and others, considerably damaged.
New Britain, Conn.—New Britain Coat Co., Inc. warehouse damaged.
New Haven, Conn.—Business building, housing Crown Shoe Repair Store, Joseph's Haberdashery, Town Shoes, A. H. Brown's Leather Goods, Fenmore Hats, Felmont Maternity Wear, Albrams Ladies Apparel, Samuel Shoes, beauty shop and offices, damaged.
Newington, Conn.—Matarese Circle Restaurant destroyed.
Tolland, Conn.—Barn on Walter Beaton farm destroyed. Possible arson.
Wilmington, Del.—Old gymnasium at Krebs School damaged.
Wilmington, Del.—Old First Unitarian Church destroyed.
Wilmington, Del.—Sparton Cocktail Lounge destroyed.
Milton, Fla.—Gasoline distribution storage yard considerably damaged. Truck driver turning on ignition of loaded truck.
Dalton, Ga.—American Legion Post 112 badly damaged.
Monroe, Ga.—Building housing stores of J. T. and R. E. Aycock, damaged. Explosion.
Ogeechee, Ga.—Stanley Motel on US 17 damaged.
Carthage, Ill.—Carl's Motor Sales destroyed. Flash fire.
Dixon, Ill.—Two buildings housing restaurant, photographer's studio, appliance store and insurance firm, severely damaged.
Kankakee, Ill.—Thom McAn Shoe Store, Miller-Jones Shoe Store, Huff & Huff Jewelry Store and Leslie's Shoe Store, damaged.
Lincoln, Ill.—Chait Bros. Warehouse and Junkyard at 421-427 North Chicago Street, destroyed.
Mulkeytown, Ill.—School building, closed for summer, destroyed.
Rosemont, Ill.—United Lumber Co. damaged.
Sigel, Ill.—Building housing Charlie's Tavern and warehouse badly damaged.
Springfield, Ill.—W. T. Grant Co. store considerably damaged.
Springfield, Ill.—Willis Meyers Upholstering Corp. damaged.
Sterling, Ill.—Two-story apartment dwelling housing beauty salon and photographic studio and adjacent garage destroyed; nearby dwelling-barber shop of Raymond Hoffman and one-story office building, damaged.
Gary, Ind.—Auction House in Black Oak damaged.
Markle, Ind.—Stock barn near Wabash River, livestock pens and block of business buildings, housing tire warehouse and furniture store destroyed or severely damaged.
Sellersburg, Ind.—Regan Chevrolet Inc. destroyed.
Fort Dodge, Iowa—Gamble Department Store building, housing Wicker Jewelry Store and apartments, destroyed; adjoining F. W. Woolworth Store, Bickford-Johnson Store and State Bank damaged.
Cadiz, Ky.—Trigg County High School building destroyed.
Cynthiama, Ky.—Buildings housing Douglas M. McCloney & Sons, L. C. McCloney Farm Implements & Hardware, Independent Warehouse Co. and American Tobacco Prizing House, destroyed.
Henderson, Ky.—Smith Mills Community Coal Co. tipple extensively damaged.
Hopkinsville, Ky.—American Legion Club building destroyed.
Louisville, Ky.—Dick Asher's Club Merry-Go-Round and package liquor store heavily damaged.
Owensboro, Ky.—Medley Distilling Co. warehouse destroyed. Lightning.
Paducah, Ky.—Two-story building of West Kentucky Coal Co., housing medical office and store of McCurrie Hacker, extensively damaged. Explosion believed deliberate.
Pewee Valley, Ky.—One-hundred-and-twenty-five-year-old dwelling of M. P. Paris destroyed.
New Orleans, La.—Brand Dispatching Co. warehouse damaged.
Bangor, Me.—Eight buildings, housing Harold MacQuinn's repair shop, former antique shop, garage, housing Chauncey MacFarland's funeral equipment, service stations of Fulton Buzzell and Harold Dodge and dwellings of George Abel and Roger Stearns destroyed or damaged.
West Rockport, Me.—Maine Blueberry Growers Inc. processing plant destroyed. Lightning.
Baltimore, Md.—Auto Parts Co. badly damaged.
Baltimore, Md.—Pythian Castle, housing Supreme Liberty Life Insurance Co. and J. Arnett

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6044

Frisby Real Estate Co. and adjoining Laundry building, damaged considerably.

Baltimore, Md.—Buildings at 2443-45-47 East Preston St. heavily damaged.

Baltimore, Md.—Two buildings of Industrial Sales Co. destroyed.

Baltimore, Md.—St. Casimir Catholic Church damaged.

Hurlock, Md.—Eight housing units at Adele labor camp destroyed.

Takoma Park, Md.—Carroll Avenue building, housing Savage's Market, Daly's Cleaners and apartment damaged.

Woodlawn, Md.—Broiler house and 2,000 chickens owned by William Crist destroyed.

Boston, Mass.—Atlas Terminal Warehouse and two boats damaged.

Boston, Mass.—Revere Sugar Refinery, pier and freighter Cholena along Mystic River, damaged.

Bridgewater, Mass.—Interstate Fireworks Mfg. & Display Co. damaged.

Chelsea, Mass.—Block, housing five stores, including Kauf's Auto & Bicycle Appliance Shop and apartments, damaged.

Ft. Devens, Mass.—Four barracks, mess hall and administrative unit heavily damaged. Explosion of propane gas tank truck.

Haverhill, Mass.—Haverhill Country Club destroyed.

Lawrence, Mass.—Six apartment dwellings badly damaged.

Lowell, Mass.—Louis O. Beede sawdust plant and attached warehouse, formerly Harvard Brewery, badly damaged.

Lowell, Mass.—Rex Amusement Center, housing restaurant, bowling alleys, steam baths and banquet halls, destroyed.

Malden, Mass.—Commercial street building, housing Malden Seat Cover Mfg., Acme Lithograph Co., Maymard Dress and Safety-Maid Products, damaged.

Melrose, Mass.—Main St. building, housing Hugo's Appliance Store, dentist's office and Melrose Girl Scouts, heavily damaged.

Methuen, Mass.—Storage and garage building of Chiana Cheese Co. extensively damaged.

Wakefield, Mass.—Hill's Boathouse at 1 Lake Avenue on shores of Lake Quannapowitt heavily damaged. Spark from air compressor landed in gasoline can.

Waltham, Mass.—Perrine Foundry damaged.

Waltham, Mass.—Piety Corner Gardens Restaurant damaged.

Detroit, Mich.—Downtown bar and grill, closed for repairs, damaged.

Lansing, Mich.—Schmidt Bros. Supermarket damaged. Possible arson.

Itta Bena, Miss.—Curry Lumber Co. destroyed; several nearby dwellings damaged.

Columbia, Mo.—Nowell's Supermarket destroyed.

Kansas City, Mo.—Employees' Consumer Organization warehouse, Eco Building, Davidson Furniture Co. and Fashion Credit Co. destroyed or damaged.

St. Louis, Mo.—Ambassador Kingsway Hotel damaged.

Sedalia, Mo.—Halbert Printing Co. plant damaged.

Washington, Mo.—Korger Supermarket destroyed. Overheated motor.

Concord, N. H.—Three warehouses of Boutwell Lumber Co., Quinn Tire Shop, three apartment dwellings and several garages, destroyed or damaged.

Edison, N. J.—Sam Mele's Dugout, night club destroyed.

Garfield, N. J.—Faulkner Associated Industries aluminum products plant severely damaged. Explosion.

Jersey City, N. J.—Baker Paint & Varnish Co. warehouse destroyed.

Jersey City, N. J.—Plastic Materials Inc. damaged. Possible arson.

Newark, N. J.—Building housing Bay Drug Co., Inc. store, dress shop, camera store and apartments, damaged.

Penns Grove, N. J.—H. S. Justice & Co., lumber yard damaged.

Roselle, N. J.—Two-story warehouse at rear of Smith's Auto Parts Store, heavily damaged.

Union, N. J.—Alexander's Furniture and Interior Decorating Store, Fiore Florist Shop and delicatessen in business district, damaged.

Union, N. J.—Winston Furniture Co. destroyed.

Union City, N. J.—Union City Plastic Corp. damaged. Overheated music record pressing machine.

Canaan, N. Y.—Charles Reith's restaurant destroyed. Gas tank explosion.

Davenport, N. Y.—Barn on August and Leon

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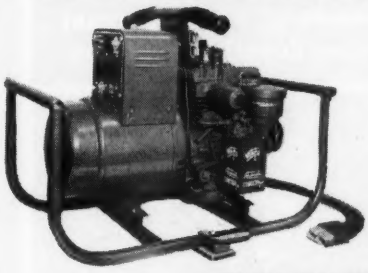

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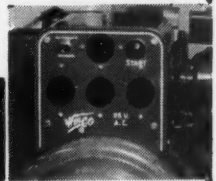

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FAST RELEASE

Bassani farm destroyed. Spontaneous combustion.

Garden City Park, L. I., N. Y.—Building housing K & W Thompson Tool Co. considerably damaged.

Glen Head, L. I., N. Y.—High Farms road mansion of William B. Rand, Jr. damaged.

Great Neck, L. I., N. Y.—Four one-story buildings at 410 to 416 Northern Blvd. destroyed.

Hobart, N. Y.—Barn of Randall O. Brockway damaged.

Schenectady, N. Y.—General Electric Co. building No. 6 damaged.

Shelter Island Heights, L. I., N. Y.—Three summer dwellings, one owned by Rev. Hugh C. Burr of Berea, Ohio, severely damaged.

Worcester, N. Y.—Hardwood Products Div. of Worcester Ind., Inc. destroyed.

Burlington, N. C.—Southern Bell Telephone & Telegraph Co. annex, under construction, damaged.

Edenton, N. C.—Spedic Food Products Co. destroyed.

Lumberton, N. C.—Carolina Warehouse owned by Carolina Grain & Feed Co. destroyed. Backfire from tractor.

Nashville, N. C.—Planters Cotton Oil Mill gin destroyed.

Grand Forks, N. D.—State-owned North Dakota State Mill & Elevator feed mill annex damaged. Explosion.

Canton, Ohio—Barn on Ralph Linder farm destroyed.

Cincinnati, Ohio—Carroll & Edwards Co. damaged.

Cleveland, Ohio—B & K Bicycle and Lawn Mower Shop badly damaged. Storage cartons too close to hot water heater.

Cleveland, Ohio—Darling & Co. rendering plant damaged. Welder's torch ignited grease.

Dayton, Ohio—Vindale Corp. destroyed.

Fort Recovery, Ohio—St. Clair Mills Inc. elevator and farm supply store damaged.

Lima, Ohio—Warehouse housing Fruit Distributors, Inc., Glepper Distributing Co. and Ford-Pugh Potato Chip Co., destroyed.

Struthers, Ohio—Stambaugh-Thompson Co. hardware and appliance store damaged.

Toledo, Ohio—Building housing Beaute Craft Supply Co., Earl's Shoes, Remington Rand Shaver Division and Arthur Murray Dance Studios, damaged.

Toledo, Ohio—Food Town Supermarket damaged.

Coquille, Ore.—Coquille Valley Elks Club destroyed.

Delake, Ore.—Wolf Myrtlewood Factory destroyed. Defective wiring.

Glendale, Ore.—Patterson Lumber Co. sawmill destroyed. Short circuit.

Grants Pass, Ore.—Brown Bros. Lumber Co. destroyed. Burner sparks.

Medford, Ore.—Dumas Laundry destroyed.

Monitor, Ore.—Monitor Seed Hill and Blue & White Cafe destroyed. Explosion.

Portland, Ore.—Globe Dock & Elevator Co. destroyed. Spontaneous ignition.

Portland, Ore.—J & J Cafe and apartments damaged. Arson reported.

Portland, Ore.—Lincoln Memorial Park Cemetery maintenance building destroyed. Torch sparks.

Sisters, Ore.—Altier Garage destroyed. Welding torch.

Stayton, Ore.—North Santiam Sand & Gravel plant destroyed. Welding torch sparks.

Umatilla, Ore.—Stewarts Town & Country Supermarket destroyed.

Waldport, Ore.—Fisher Grade School destroyed.

Willamina, Ore.—Garrabrant's Sawmill destroyed.

Avondale, Pa.—Two vacant double mushroom houses at rear of Pennsylvania State Police Barracks destroyed.

Berwick, Pa.—H. R. Garrison & Son flour and feed mill destroyed.

Bristol, Pa.—Minnesota Mining Mfg. Co. plant damaged.

Manoa, Pa.—National Wood Preservers plant destroyed. Explosion.

Middletown, Pa.—Garage and precision instrument stock of Frank Furjanici destroyed. Spark from electrical splicing.

Philadelphia, Pa.—Building housing Barmash Sign Advertising Service destroyed.

Philadelphia, Pa.—Packel Furniture Co. warehouse destroyed.

Philadelphia, Pa.—Resin tank at Cargill, Inc. plant destroyed. Explosion.

Philadelphia, Pa.—S. K. Exchange warehouse heavily damaged.

Philadelphia, Pa.—Seville Furniture Co. heavily damaged.

Philadelphia, Pa.—Wonder Chemical Co. plant heavily damaged. Explosions.

Pottstown, Pa.—Barn on Warren B. Zern farm destroyed.

Shippensburg, Pa.—Sherman Hotel damaged.

Upper Darby, Pa.—Building housing Millbourne Supply Co. and Vimco Concrete Accessories Inc. destroyed.

Bristol, R. I.—Colonial Inn, formerly Bristol Hotel, severely damaged.

Providence, R. I.—Floorcraft Inc. store damaged.

Providence, R. I.—Mario Mancicici's spa and variety store heavily damaged.

Beaufort, S. C.—The Exchange, Inc., furniture store, damaged.

Pageland, S. C.—Baxley-Faile Co. furniture firm damaged. Faulty wiring.

Chattanooga, Tenn.—Children's home in suburbs considerably damaged.

Manchester, Tenn.—Restaurant-service station-garage of Harvey Knight destroyed. Burning grease on stove caused explosion.

Memphis, Tenn.—Kroger Supermarket in Lamar-Airways Shopping Center damaged.

Nashville, Tenn.—Kaufman's Kosher Delicatessen, adjacent Juanita's Tavern, The Jungle Cocktail Lounge, Ira Johns Barber Shop and Jimmie's Tavern, damaged.

Brownfield, Tex.—Grain elevator at Goodpasture Grain & Milling Co. considerably damaged. Explosion.

Garland, Tex.—Garland Bowling Lanes damaged.

Houston, Tex.—700-foot dock and drydock at Todd Shipyards damaged.

Heber City, Utah—Evan Anderson Lumber Mill damaged.

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Salt Lake City, Utah—John Evans Advertising Co. badly damaged.

Blacksburg, Va.—Price Hall on Virginia Tech Campus, housing top-floor laboratory, damaged.

Ephrata, Wash.—Columbia Plastics destroyed. Acetylene torch spark.

Kenmore, Wash.—Far West Plywood Mill destroyed.

Mukilteo, Wash.—Viking Lumber Co. planing mill destroyed.

Seattle, Wash.—Dallas & Mavis Forwarding warehouse destroyed.

Kenosha, Wis.—Block-long plants of Huber Glass Co. and Midwest Contractors Supply Co. destroyed.

Merrill, Wis.—J. C. Penney Co. destroyed. Explosion.

Milwaukee, Wis.—Quality Plymouth, Inc., including seven cars and the building, damaged. Gas tank of a car exploded.

Milwaukee, Wis.—Cornell Paperboard Products, including three 1,000-ton stacks of wastepaper and cardboard damaged. Fire set by 14-year-old boy.

South Milwaukee, Wis.—Midwest Tanning Co. damaged.

Sturgeon Bay, Wis.—Sixty-two-year-old grain elevator and coal shed of the Peninsula Feed Co., including 20,000 bushels of grain, destroyed.

Two Rivers, Wis.—Stangel's supermarket completely gutted. Burglar.

Pinedale, Wyo.—Cow barn, milking shed, processing room and equipment of Mt. Airy Dairy destroyed.

Vancouver, B. C.—Waterfront buildings, including British Columbia Fir Products, destroyed.

Collingswood, Ont.—Blue Mountain dwelling of former mayor Julian Ferguson damaged.

Sudbury, Ont.—Our Lady of the Rosary Roman Catholic Church destroyed.

Montreal, Que.—Industrial building, housing Sauvage Display Co. Ltd. and Belcker & Co. Laboratory, heavily damaged. □□

A.E.C. Sets Up Eight "Hot Spot Teams"

The Atomic Energy Commission has established "hot spot teams" at its installations at Oakland, Calif.; Idaho Falls, Idaho; Lemont, Ill.; Albuquerque, N. M.; New York City; Oak Ridge, Tenn.; and Richland, Wash.

The team members are nuclear specialists on call and ready at a moment's notice to fly to the scene of a nuclear disaster. When the use of nuclear power becomes widespread, the protection service may require full-time crews at strategic points throughout the country.

As an example of how the teams operate, the team with headquarters in the New York Operations Office is responsible for the states along the Atlantic Coast from the District of Columbia to Maine. This team has a car with siren and flashing light. It also has arranged with the Coast Guard for helicopter transport and with the Air Force to have a plane available at Mitchell Air Force Base, Hempstead, L. I.

In one of the laboratories at the New York Operations Office is a stack of six brown suitcases. These are "hot spot kits," ready to be grabbed and carried to the scene of an accident. Twenty more kits are scattered around the northeastern states at the homes or offices of the troubleshooters. The kits contain shoe covers, coveralls, a Geiger counter, a cord and road flares for isolating contaminated areas, an air sampler comparable to a small vacuum cleaner and a flashlight.

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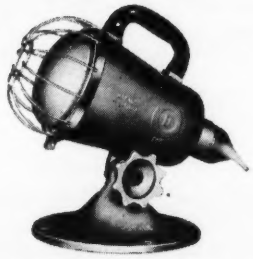
1500 Watt Portable

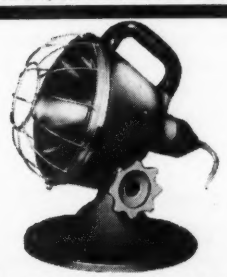
No. 156M 1500 Watt, R-80 Flood.

Rugged, Weatherproof sealed beam lamp, light weight only 11½ lbs. Compact 13½" high, 9" dia. base. Wired complete with twist lock connector.



No. 150 HIGH INTENSITY FLOOD R-40, 200-300 or 500 W.

Rugged, weatherproof, sealed beam lamp, light weight only 6 lbs. compact 11" high, 9" dia. base. Wired complete with twist connector.



No. 163 HIGH INTENSITY NARROW BEAM FLOOD OR SPOT LIGHT 300 WATT.

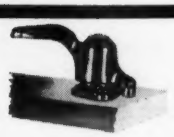
Same rugged construction as the 150 series, only lamp housing designed to use the Par 56 sealed Beam rim mounted lamp, 9" dia. base, weight 5½ lbs.

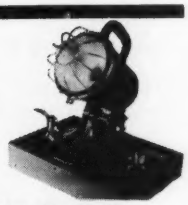
OUTLET BOXES

3 OUTLET

4 OUTLET WITH SIGNAL LIGHT

Boxes provide 3 or 4 20A outlets from single feed line. Twist lock connection, completely weatherproof.





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Are heavy duty, and have a rough service filament, heat and weather resistant glass. Mogul and Medium base. These lamps are designed to match the rugged construction of the CIRCLE-D LIGHTS. For trouble free performance specify CIRCLE-D LAMPS.

You have a lighting problem? — Contact Circle-D—We are constantly keeping pace with the ever growing demands for better lighting.

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SLIDE FIRE ESCAPES

POTTER Slide Fire Escapes are designed for Schools, Hospitals, Orphanages, Homes for Aged, Mental Institutions, Industrial Plants and Buildings of Public Assembly.

Types

Potter Slide Fire Escapes are constructed in two types—The Straight Tubular Chute and the Vertical Spiral — and in two sizes — one for able-bodied persons of all ages; one for removal of bed-ridden patients on mattresses.

Advantages

POTTER Escapes are entered direct from the room or hall, eliminating the need for walking out on to platforms and thus assuring the fastest possible exit. They can be entered at many floors at the same time without confusion, congestion or injury.

There is no acceleration in spiral escapes; therefore, they can be used on thirty-story buildings as safely as on buildings of two or three stories. Because of the change in position, one does not get dizzy.

POTTER Escapes eliminate slipping, falling, stumbling and pushing which among the panic-stricken often result in injury and death.

Because the escapes are fully enclosed, the occupants of POTTER equipped buildings are fully protected from falling objects, smoke, flames and adverse weather conditions which usually interfere with the use of open fire escapes.

Hundreds of lives have been saved in 30 instances of record where POTTER Escapes were used to evacuate burning buildings without injury or loss of life.

Approval

POTTER Slide Fire Escapes have been tested, approved and listed as standard by the Underwriters' Laboratories for over 25 years. They carry the approval of the Building Exits Code of the National Fire Protection Association.

POTTER FIRE ESCAPE COMPANY

6109 N. California Ave., Chicago 45, Ill,

ADMINISTRATIVE STRUCTURE

Continued from page 697

tional Guard, Naval Reserve, Army Reserve and city and county government, which passes on the merit of each case. The civil service commission recognizes these awards and allows from one to five points on promotional examinations for recipients.

On-duty chiefs meet weekly in the office of the deputy chief executive to discuss operational problems. These sessions are also used to discuss strategy and tactics employed at large fires during the last tour of duty. It is the consensus of opinion that coordination between groups is improved by these meetings.

Major operational problems are referred to the recommendation committee. This committee is composed of the deputy chiefs who head the various divisions and the director of the bureau of municipal research. The chairman of this committee is the deputy chief executive.

The training division, under command of a deputy chief is responsible for all training activities. One battalion chief, two captains, one lieutenant and two firemen are assigned to this staff. Recruit training classes, in-service company training, officers' training and specialized classes are held at the fire academy.

Company training

Each company officer is required to hold a two-hour training class daily at the fire station under the general supervision of the training division and monthly training reports are submitted. The training division publishes a manual that is used as a guide.

Fire prevention activities are the responsibility of the fire marshal, a deputy chief assigned to this duty by the chief. He is the enforcement authority for the city fire prevention code which is patterned after the suggested code of the National Board of Fire Underwriters. One battalion chief, two captains, four lieutenants, 12 firemen and two civilians are assigned to this division. Public assembly and school fire safety are the responsibilities of this division. In addition to the above personnel, one battalion chief and one detective lieutenant of the police bureau are detailed for fire investigation activities and report directly to the fire marshal.

The engineering and repair division is commanded by a deputy chief assisted by a fire equipment maintenance supervisor, one assistant supervisor and five senior maintenance mechanics. The engineering division

and the fire training division cooperate in the testing of all new apparatus and appliances before they are recommended to the fire chief for approval and purchase.

The building maintenance division makes all repairs to the fire stations. Six members of the various trades are employed in this division and the building maintenance superintendent reports directly to the deputy chief executive.

The supply division is commanded by a captain, assisted by one lieutenant and six firemen. This division has charge of all supplies including hose and breathing apparatus. One man is always available to deliver extra air tanks to the scene of a major fire.

The communication system of the fire bureau is controlled by two separate divisions. The fire alarm maintenance division is commanded by a superintendent. He is directly responsible for the operation and maintenance of the fire alarm telegraph system and the fire bureau telephones. He is assisted by two foremen, two linemen, two cable splicers and two assistant linemen.

The dispatch center is commanded by the chief fire dispatcher. One senior dispatcher and two dispatchers are assigned to each of three groups that work exactly the same as the line division groups. Radio repairs are made by the bureau of public safety radio.

In common with most fire departments, Rochester has an overwhelming majority of men assigned to line fire fighting duties. At the same time, in keeping with sound administrative principles, a solid staff section is employed to service the unique needs of fire fighting operations. This permits continuous planning and evaluation of all phases and increases effectiveness and efficiency. □□

New York City Firemen Award Scholarships

The New York Fire Department Holy Name Society, Branch 141, recently awarded 14 high school scholarships to sons and daughters of members. The 30 youngsters who placed highest in the scholarship examination were given scrolls at a meeting of the society on June 7. The certificates were hand-lettered by the former president of the society, Lieutenant Joseph J. Reilly, and the Very Rev. Msgr. Leo G. Farley, fire chaplain, presented them. Brother Lawrence Killelea, principal of Power Memorial Academy and son of a New York City fire fighter, was the speaker. The Rev. Vincent A. Kennedy, Nassau County fire chaplain, also spoke briefly. He was accompanied by Wayne Myers of the Rockville Centre Fire Department.

DO YOU KNOW...?

Q. What is a Hi-Light Badge?

A. A revolutionary new lightweight Blackinton Badge designed for featherweight comfort, service and appearance.

Q. Why was Hi-Light developed?

A. It was originally designed for use on lightweight summer uniforms, but has become extremely popular for year round wear.

Q. Just how light is a Hi-Light Badge?

A. A Hi-Light Badge is actually one-third the weight of a conventional brass badge, so light you hardly know you're wearing it.

Q. What other superior qualities does Hi-Light have?

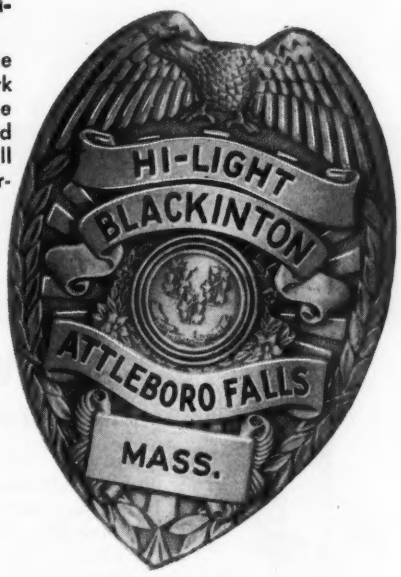
A. Even though the badge is made from an entirely new feather-light metal, it retains the same durability and high quality deep cut precision die work that has made Blackinton badges famous.

Q. What finishes are available on Hi-Light Badges?

A. Three gleaming finishes, brilliant polished nickel, long-lasting rhodium and rich lusterous gold plate.

Q. How can I recognize a Hi-Light Badge?

A. Every Hi-Light Badge has the Blackinton Hi-Light trademark stamped on the back of the badge. It's featherweight and this recognized trademark will assure you of buying and wearing the best.



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the round table

discussion of current fire department and fire management problems

Handling Manpower Shortages

THIS IS THE FINAL installment of the Round Table on handling manpower shortages.

Readers are invited to submit comments on next month's subject, as well as on the current one. Address replies to Round Table Editor, FIRE ENGINEERING, 466 Lexington Avenue, New York 17, N. Y.

The Discussion

W. J. Lewis, Chief, Norfolk, Va.: Our department personnel roster does not provide for extra men to be used to maintain company strength.

In case of illness to individuals, the temporarily vacant positions are not filled by extra men.

Provisions are not made for filling vacant positions during vacations.

Company officers are substituted for during illness, injury or vacation periods by taking men on the eligible list for promotion and allowing them to act.

In the event of a serious manpower depletion due to illness or injury, members of the department can be called back for duty and be given compensation.

Laurence F. Lynch, Chief, Brockton, Mass.: We do not provide for extra men to be used to maintain company strength at a certain level.

In case of illness to individuals or during vacation periods, the temporarily vacant positions are not filled by extra men.

We substitute company officers during illness, injury, etc., by detailing senior members of companies to take charge.

In the event of a serious manpower depletion, department regulations do not require that off-duty personnel work overtime; personnel of companies are rearranged.

Leonard A. Petrucelli, Chief, Meriden, Conn.: Our department personnel roster does not provide for extra men to maintain company strength.

In case of illness or when men are out on vacation, the company operates shorthanded.

A senior fireman in the company, who becomes the acting officer, substitutes for a company officer during illness, injury or vacation periods.

Department regulations do not require off-duty personnel to work extra time in the event of a serious manpower depletion by illness or injury. However, an emergency could be declared, bringing in off-duty personnel. They would be compensated at a later date, with time off for the extra time they worked.

J. E. Bayliss, Chief, Victoria, B. C.: We provide for extra men to be used to maintain company strength. Our pump company strengths are: One lieutenant, one fireman driver and two hosemen; Truck company strengths are: One captain, one fireman driver and five ladderman.

Illness is covered by extra men if available, otherwise off-duty personnel are called in and paid for extra shifts worked.

Three extra men are on strength for each platoon (two platoon system) for holiday relief coverage.

Junior officers are moved up to cover the senior officers' positions vacant through sickness or otherwise, and are paid senior position rate when working, i.e., lieutenants for captains; captains for assistant chiefs.

Department regulations require that

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THIS MONTH'S QUESTIONS

Does your department personnel roster provide for extra men to be used to maintain company strength at a certain level under all foreseeable conditions? If so, what are your general company manpower levels?

In case of illness to individuals, are the temporarily vacant positions filled by extra men?

Are provisions made for filling temporarily vacant positions during vacations?

How are company officers substituted for during illness, injury or vacation periods?

In the event of serious manpower depletion by illness or injury, do department regulations require that normally off-duty personnel work extra time?

normally off-duty personnel work extra time when necessary. However, all extra time worked is paid for by cash.

C. M. Deal, Chief, Lakeland, Fla.: Our department does not provide for extra men to be used to maintain company strength.

We do not fill temporarily vacant positions due to illness to individuals or when men are out on vacations.

First-class firemen, who are in line for promotion, will be stepped up for temporary assignment in case the company officer is ill or injured.

While regulations do not require it, the working agreement with the men assures us that we can call back off-duty personnel in case of an emergency.

L. Waits Guthrie, Chief, Atlanta, Ga.: If our manpower drops below a certain level, leaves of absence are cancelled. Our general manpower level is five men to the apparatus.

Temporarily vacant positions due to illness are filled only if certain levels are exceeded.

Provisions are not made for filling temporarily vacant positions during vacations.

Company officers are substituted for during illness, etc., by acting officers.

In the event of a serious manpower depletion, department regulations require that normally off-duty personnel work extra time.

C. M. Weaver, Chief, Ithaca, N. Y.: We are a part-paid, part-volunteer department, with the only paid personnel being drivers, dispatchers, a lieutenant per shift, a fire alarm electrician, two

WHY

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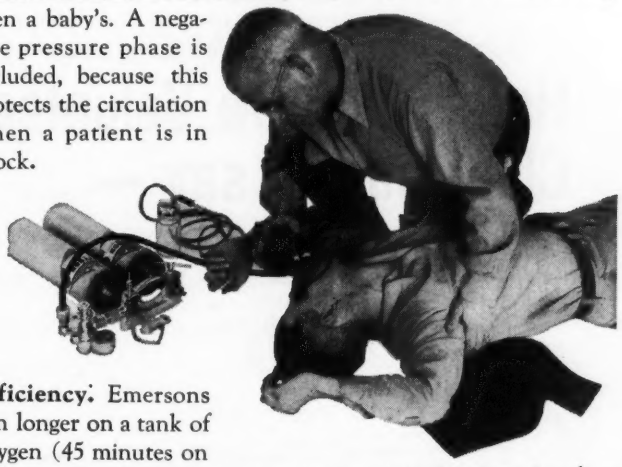
1. **Simplicity.** Speed saves lives and simplicity means speed. Emersons have it.

2. **Safety.** The factory-set pressures have proved effective, and are not adjustable. In over 16 years, since their acceptance by the American Medical Association, they have never harmed a lung, even a baby's. A negative pressure phase is included, because this protects the circulation when a patient is in shock.



3. **Efficiency.** Emersons run longer on a tank of oxygen (45 minutes on a "D" tank, if the mechanism is **air-mixing**). On a beach or other remote place this factor may save a life.

4. **Adaptability.** Standard models can be adapted for **dual, triple,** or **quadruple** use. Extension hoses can be used to give full protection 400 feet away from the parent machine, complete with **aspirator** as well as **resuscitator** and **inhalator** functions. Large cylinders can be hooked up, for long cases, by using a flexible connector.

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For over a year we have owned a FC170 Jeep fire truck, manufactured by the Valley Fire Truck Co. We are especially proud of this apparatus. It has saved us considerable manhours and manpower. We have knocked down and put out many brush fires with little effort and only using the driver of the vehicle and a man handling the booster hose while the vehicle was in motion.

I wish to cite an instance when our truck was called out of our district to combat a field fire where at least 10 other companies were called for assistance. Being a windy day the fire raced across dry grass and cornfields uncontrolled. Manpower was utilized with indian tanks as this was the only means of getting to the fire. With the fire heading towards a farm dwelling and barn, our JEEP took thru the fields, knocked down the fire which was approaching the dwelling and barn and then proceeded to extinguish the rest of the field fire.

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assistant chiefs and the chief. Three extra men, one assigned to each shift, are provided to accommodate sick leave and vacations. All other manpower is volunteer, made up of eight companies and their elected officers.

In case of illness, the vacant positions are filled by the extra men and by assigning the lieutenants to driving duty.

Although one man per shift is provided to fill vacation vacancies, it is necessary to cease fire prevention work and throw companies out of service in the event of illness during the vacation period scheduled from May to November.

There is no provision for substituting officers during illness and vacation, except for the substitution of lieutenants for chiefs.

Under department regulations, off-duty personnel may be required to work extra time.

H. L. Hales, Chief, Monroe, La.: We do provide for extra men to be used to maintain company strength. Within the fire district, we use four men per truck. Outside the fire district, three men are required.

As a rule, we allow the oldest (in seniority) qualified eligibles to fill those positions left vacant by illness.

We assign the youngest in class seniority to work nothing but vacations, which in our department is a year-round assignment.

The "next-in-line" man substitutes for company officers when they are out for illness, injury or vacation reasons.

Department regulations require that normally off-duty personnel work extra time in the event of serious manpower depletion and they are paid time-and-a-half for all overtime.

V. L. Crusinberry, Chief, Sioux Falls, S.D.: The Sioux Falls Fire Department, like most other department, experiences manpower problems and shortages. We have a total of four engine companies, one aerial and two service truck companies, with a total personnel of 78 men. Of this number, 69 men are assigned to the apparatus. The two engine companies in headquarters are manned with the minimum of five and four. The two district companies are manned for a minimum of four men on duty. Reserve or extra men are kept at the central station and answer district fires in the district chief's vehicle, which is an emergency panel truck. Three to four men accompany this equipment.

We do not maintain any extra men for either vacations or sick leave, and vacations are scheduled the year round.

Officer replacement for illness and vacations are made by using men next on eligible promotional lists to fill in.

In the event of serious manpower depletion, the normal off-duty personnel would work extra time.

J. E. Travis, Chief, Salina, Kansas: Our department personnel roster does not provide for extra men to be used to maintain company strength.

In case of illness to individuals, the temporarily vacant positions are not filled

NEXT MONTH'S QUESTIONS

Do you regularly schedule public and private school fire prevention inspections? If so, do you have legal authority to inspect these schools and order violations corrected or are the inspections made on an "invitation and cooperation" basis?

Do you require automatic sprinklers or automatic fire detectors in school buildings?

Do you require that school fire alarm systems be connected directly to fire alarm headquarters?

Do you permit smoking in teachers' lounge rooms and similar restrooms?

Do you have a program for instructing teachers and school janitorial help in the rudiments of fire prevention? If so, briefly outline the subject matter.

by extra men, and no provisions are made for filling vacant positions during vacations.

We do not substitute for company officers during illness, injury or vacation periods.

In the event of serious manpower depletion by illness or injury, department regulation do not require that men work extra time.

George F. Lowe, Chief, Pueblo, Colo.: Our department provides for extra men to be used to maintain company strength. Our manpower level is: A minimum of three men in residential companies and five in high-value companies.

We have four men on each shift who act as "boomers." These men are moved from one company to another to fill vacancies caused by vacations and illness.

Our company officers are substituted for during illness, injury or vacation periods by appointing men in companies as acting officers.

Our rules give the chief authority to call members of the off-shift of the department to fill in during emergency situations. These men are paid time-and-one-half, except in case of a major fire, when they receive straight time.

L. F. McDonald, Chief, Jackson, Miss.: Our department provides for extra men to be used to maintain company strength. Our general company manpower level is four to five men to each company.

This department keeps its manpower strength up by doubling off-shift men in the same rating, with double pay, for those who are out due to illness, vacations, etc.

Company officers are substituted during illness, injury, or vacation by officers on the off-shift.

In the event of a serious manpower depletion, department regulations require that normally off-duty personnel work extra time, with extra full pay.

Duncan M. Murdoch, Chief, Concord, N. H.: We do not provide for extra men to be used to maintain company strength at a certain level under all foreseeable conditions.

In case of illness to individuals, the temporarily vacant positions are filled by extra men; vacant positions due to vacations are also filled in this manner.

Company officers are replaced by day-off officers during illness, injury or vacation periods.

In the event of serious manpower depletion by illness or injury, department regulations require that normally off-duty personnel work extra time.

A. Z. Lokey, Chief, Greenville, Miss.: In our department, we do not provide for extra men to maintain company strength.

In case of illness to individuals, the temporarily vacant positions are not filled by extra men.

During vacations, provisions are not

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made to fill the temporarily vacant positions.

Company officers are substituted for when necessary; each fire station has a lieutenant that serves as acting captain.

In this department, the emergency has never reached the manpower depletion stage but should the occasion call for it, our men would work extra time.

Gerald J. Ring, Chief, Binghamton, N. Y.: We do not provide for extra men to be used to maintain company strength. Our general company manpower level is four men on each company.

If possible, vacant positions in the department due to illness are filled. However, there are times when extra men are not available.

No provisions are made for filling vacant positions during vacations.

Company officers are substituted for during illness, injury or vacation by the oldest first-grade man on that company.

In case of an emergency, the chief may suspend the three-platoon system. We have a few extra men on each platoon but sometimes some companies are down to three men.

J. H. Freeman, Chief, Tucson, Ariz.: Extra men in our department are used to maintain company strength. We use the following general company manpower level: four men to the pumper company; six men to the ladder company.

The number of permanent personnel members are based on normal absences due to illness and vacations.

In the event of serious manpower depletion by illness or injury, department regulations require that normally off-duty personnel work extra time, for extra compensation.

C. D. Sirmon, Chief, Mobile, Ala.: Our department personnel roster provides for extra men to be used to maintain company strength. Our general manpower level is four men.

In case of illness to individuals, the temporarily vacant positions are partially filled by extra men.

At present, provisions have not been made for filling vacant positions during vacations because this has never been necessary.

In our department, extra captains substitute for company officers during illness, injury or vacation periods. Provisions are also made for filling Kelly Day vacancies.

Department regulations do not require that off-duty men work extra time in the event of a serious manpower depletion.

Wagner Sorensen, Chief, Reno, Nev.: Our department personnel roster does not provide for extra men to be used to maintain company strength.

Temporarily vacant positions due to illness or during vacations are not filled by extra men.

When company officers are out during illness, injury or vacation, men from the next lowest rank are appointed in an acting capacity.

In the past and we presume in the future, if necessary, off-duty personnel would fill in during an emergency. However, the regulations do not provide for this contingency.

J. Franklyn Dunn, Chief, Middletown, Conn.: The Middletown Fire Department fills temporarily vacant positions due to illness or during vacation periods, with off-shift men at extra pay.

Company officers are replaced by another officer when they are out due to illness, injury or vacation periods.

In the event of serious manpower depletion, department regulations require that normally off-duty men work extra time, for extra pay.

L. L. Geisler, Chief, Johnson City, Tenn.: We do not provide extra men for the purpose of maintaining company strength.

In case of illness to individuals or during vacations, the temporarily vacant positions are not filled by extra men.

Temporary officers are designated or appointed to substitute for company officers during illness, injury or vacation periods.

Department regulations require that normally off-duty personnel work extra time in the exent of serious manpower depletion. □□

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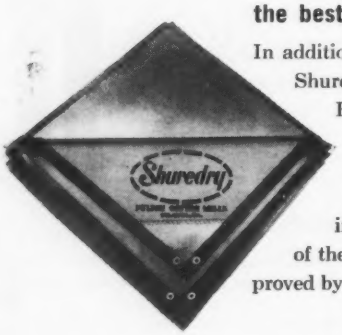

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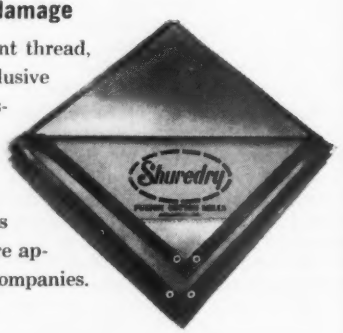

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COMMUNICATIONS CENTER

Continued from page 703

ceiver pick-up point had shown that the site at the Cobbs Hill reservoir possessed unsurpassed features for this purpose.

When the department of public safety radio center was opened in 1951, the long-sought fire radio system became a reality with two 250-watt base stations transmitting and receiving on frequencies of 154.13 and 154.31 megacycles.

The only mobile units at the time were in the chief's car, the deputy chief's and the battalion chief's vehicles, but a good start had been made not only for a city fire radio system but also the nucleus of a county-wide fire radio system which was to come very shortly. Soon both city and county systems began to expand rapidly as the possibilities of the systems were beginning to be realized and exploited by the fire officials.

Newly appointed Commissioner of Public Safety Kenneth C. Townson was an ardent believer in good communications and within a month or two, 50 station receivers were purchased for use in the firehouses and offices of the fire bureau. All alarms were thereafter dispatched by radio resulting in saving of time and elimination of unnecessary slides to the apparatus floor by the firemen at night. Soon after, a contract was awarded for the purchase of mobile radio units for all vehicles of the Rochester Fire Bureau.

Police originally in control

When the radio division was established in 1931, the radio operators and technicians were placed under the supervision of the police bureau as only police radio equipment was in use. As the use of radio expanded in the fire bureau, water department, highway department, forestry division and other city departments, it was natural and advantageous to turn to the police radio division to make use of its more than 20 years experience in local mobile communications. The radio division gladly provided all the assistance it could under the circumstances and a police bureau budget.

In 1952, to facilitate the work of the radio division in serving the fire bureau and other departments and divisions of city services, it was made a separate division of the department of public safety with a superintendent responsible for its operation. With its own budget, and working directly under the commissioner, the efficiency of the radio division has increased to the

REPUBLIC

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Single Jacket

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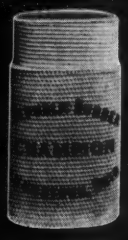
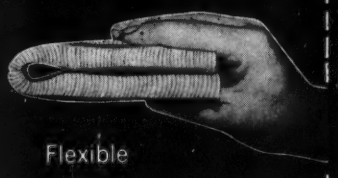


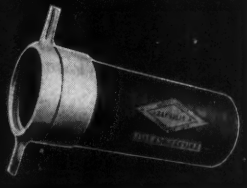
Cotton

or Cotton and Dacron



Flexible

or Hard



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benefit of all the departments served.

The division has a staff consisting of a superintendent, assistant superintendent and 10 radio technicians with first or second-class licenses.

The technicians install, repair and service all electronic equipment and also act as dispatchers for all town, village and county police calls. They also handle all intercounty fire and police radio communications.

A radio truck is available at all hours. This panel truck is equipped with six working two-way radio units operating in the different systems, as well as a public address system, portable units and other equipment. It responds to all multiple-alarm fires and other serious emergencies and acts as a communications center for the various services at the scene.

A program is presently well under way to replace most of the older radio equipment now in use. All new units will contain two-frequency receivers which will permit the complete separation of the city and county radio systems during serious emergencies when radio traffic is extremely heavy.

Using the radio division to plan, install and maintain all city radio equipment has worked out very satisfactorily with the long experience of the personnel available to all departments of city government and county when requested. This has prevented repetition of earlier problems and provided material, supplies and trained technicians on duty around the clock with preference being given to fire and police equipment.

For many years Monroe County has operated a fire service mutual aid system employing the Rochester communications center as its dispatching headquarters. Upon its availability, the advantages of radio for such purposes were immediately apparent and a movement was begun to extend the services to a county system.

All apparatus radio-equipped

The Monroe County radio system in its early days was questioned by some authorities in the county fire services. However, the obstacles were overcome and the system has grown steadily until today all fire apparatus is radio-equipped. In addition, practically every volunteer company has its own base station operating on a frequency of 154.31 mc for communicating with its vehicles as well as with the radio center and the fire alarm headquarters.

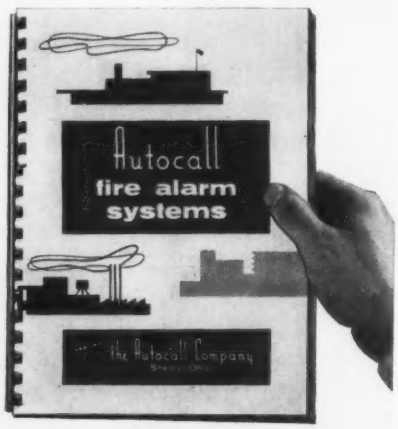
Selective calling units are installed at the fire alarm headquarters and the radio center and are being used extensively to alert all companies by radio in the county outside of the City of Rochester. All county and city school districts and most large manufacturing plants can also be alerted in the event of enemy attack or other serious emergency.

Many hundreds of county firemen and some city fire officers are equipped with special alerting receivers and can be called from their individual company stations or from the city transmitters. At the present rate of growth all volunteer firemen in the county will be provided with these effective units within a relatively short time. The use of alerting sirens in crowded communities will not be necessary during the night hours if the Volunteers can be summoned without waking the other people in the area, providing proper approval is received.

In mutual aid it is often necessary for Monroe County fire companies located near the county borders to work with fire companies in adjacent counties which employ frequencies of 46.10 and 46.22 megacycles. As all Monroe County companies operate on the high band, a 60-watt base station operating on the low band has been installed at the radio center to furnish

your community respects your advice on

FIRE ALARM SYSTEMS



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Autocall systems may be connected to an auxiliarized city fire alarm box or, if desired, transmit the signal directly to the municipal fire department. Special features such as sprinkler alarm devices can provide 24-hour-a-day automatic protection ... get the fire fighter on the job long before the fire is otherwise discovered.

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direct communication with these stations and companies in the adjoining counties. If a serious emergency occurred in Rochester or Monroe County, the adjacent responding companies would have radio contact as they moved into the city or county.

In addition, calls for assistance by these counties have been considered and a selective call unit is installed on the low-band station receiver so that a warning bell can be operated at the radio center from the counties that have need of assistance.

Monitor receivers at the radio center are in full-time operation on the frequencies of the state police, Rochester Gas & Electric Corporation, Eastman Kodak Co. and many other services. Radio contact can be made with these organizations through cross-band operation as they all monitor the radio center transmissions or can be alerted through the use of selective call.

The Rochester radio center is somewhat unique in the communication field and there are many features that may be of interest to fire chiefs. In addition, an excellent view of the city and surrounding county can be obtained from the observation platform of the radio center building. During the annual conference of the International Association of Fire Chiefs in September, visitors will be most welcome to inspect the facilities and discuss radio matters with the chief □□

FDNY Inaugurates Health Program

Fire Commissioner Edward F. Cavanagh, Jr. has announced that beginning July 18, the New York Fire Department and the Department of Health, in a cooperative venture, commenced what is probably one of the largest single personnel X-ray programs ever undertaken by a municipal agency.

Four mobile X-ray units, under the supervision of the Department of Health X-ray technicians, located at designated firehouse locations each day between the hours of 2 p.m. and 9 p.m., for the purpose of taking chest X-rays of all members of the New York City Fire Department. The units moved on pre-arranged schedules into each of the 13 divisions of the New York Fire Department at two periods each day: The first, from 2 p.m. to 5 p.m.; the second, from 6 p.m. to 9 p.m.

Commissioner Cavanagh stated that this program was undertaken upon the recommendation of the medical division of the fire department as a preventitive measure and to safeguard the substantially good health of the 12,500 uniformed and civilian members of the department. Chief Fire Medical Officer Gamliel Saland supervised the program for the New York Fire Department.

HOW would you SOLVE this FIRE problem?

A TRUE CASE HISTORY

THIS IS THE BUILDING. BIG, COSTLY...AND OLD. INSIDE, WOODEN STRUCTURE, WOODEN FLOORS. AND, TO COMPLICATE MATTERS, A FLAMMABLE PRODUCT IS MADE HERE—PAPER. DISPLAYS AND STORAGE. PROBLEM: HOW TO INSURE FAST, DEPENDABLE DETECTION OF FIRE.

THIS IS THE MAN. CONCERNED THAT ORDINARY PROTECTION MIGHT NOT PROVE ADEQUATE IN AN EMERGENCY, THE BUILDING MANAGER CALLED IN HIS KIDDE REPRESENTATIVE. SMART MOVE, SINCE THIS WAS A JOB FOR AN EXPERT.

THESE ARE THE "NERVES." WORKING WITH THE BUILDING MANAGER, THE KIDDE MAN DIVIDED THE BUILDING INTO 28 FIRE "ZONES." NEXT, MORE THAN 40,000 FEET OF THIN COPPER TUBING WERE INSTALLED. "NERVES" OF A KIDDE ATMO FIRE DETECTING SYSTEM.

THIS IS THE "BRAIN." AT THE FIRST HOT BREATH OF FIRE, THE INSTALLED COPPER TUBING REPORTS THE ABNORMAL RATE OF TEMPERATURE RISE TO THIS CONTROL CENTER. INDEPENDENT OF OUTSIDE POWER, IT SOUNDS AN ALARM BOTH LOCALLY AND AT THE MUNICIPAL FIRE STATION, AND VISUALLY INDICATES THE DANGER "ZONE."

THIS IS THE ANSWER! SPECIAL PROBLEMS IN FIRE PROTECTION DEMAND THE SERVICE OF SPECIALISTS. THAT'S WHERE KIDDE COMES IN. FOR MORE THAN THIRTY-FIVE YEARS, KIDDE HAS LED THE FIELD IN FIRE DETECTION AND PROTECTION. CAN SOLVE YOUR FIRE PROBLEMS FOR YOU. TO FIND OUT HOW—CALL OR WRITE KIDDE TODAY!

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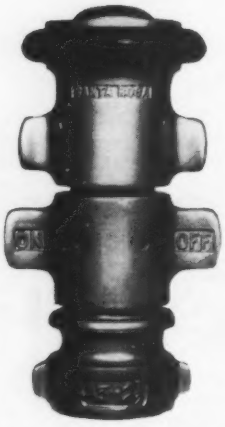
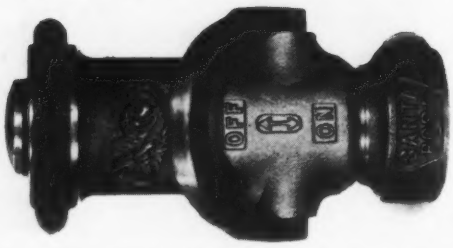
"A" Series



Easy control by one man of volume and pattern from straight stream to flat curtain. Made in 8 different sizes threaded as specified. All sizes except 2½" made in fine polished brass or chrome plated. 2½" made in light weight alloy.

"B" Series



Same fine control and patterns as "A" Series. The shut-off handle swivels to any position and can be controlled by finger tips. Sizes from 1" thru 2½" in materials as listed for "A" Series.

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CONTINUOUS TRAINING

Continued from page 705

tower helps build confidence in pompier ladder work, rescue operations and rope work especially for recruit training.

A three-story fire fighting house is in almost constant use. Specific fire conditions encountered in the various city districts may be duplicated to a high degree and thermocouples in all rooms make it possible to scientifically evaluate the effectiveness of extinguishment methods. Ventilation, breathing apparatus, search and rescue procedures, ladder operations, pumper hookups, size-up, officer judgment and equipment testing are but a few of the uses of this most valuable building.

An open elevated platform of flooring and floor joists enables participants to properly test the effectiveness of cellar pipe appliances and visually test the coverage of sprinkler heads.

A specially constructed reinforced concrete barrier with thick walls placed at 45° angles is used to acquaint firemen with extinguishment methods of burning metals and plastics such as magnesium and cellulose nitrate.

Extinguishing methods advanced

Three large pools, 16 feet in diameter, are used for solvent and oil fires. These concrete and steel-ringed pools are remotely supplied underground from three 5,000-gallon storage tanks. The 7-hp pump also delivers solvents to the base of an 8,500-gallon railroad tank car anchored on reinforced concrete piers encased in fire brick to withstand intense heat. A series of perforated piping encircle the catwalk and dome of the tank, spraying gasoline over the entire surface of the tank to complete the involvement. Many advancements in extinguishing methods for solvent fires have been developed through the continued use of these installations.

For drafting operations, a hard stand protected by a pipe fence and provided with four portable metal stairs leading to the water is situated at the river's edge. A 10-foot lift makes this an ideal location for this purpose. Fire streams from the smallest hand lines to the largest monitor streams are tested here, with the problem of drainage eliminated by directing all streams into the 275-foot wide river.

New Fire Bureau appointees are assigned to the Fire Academy for a

period of seven to eight weeks. An intensive program of basic firemanics is given each trainee before he is assigned to duty with a fire company. A thorough working knowledge of his future vocation including the ability to efficiently drive and operate pumpers and aerial ladder trucks is a must.

Safety stressed

One of the first and most important subjects taught is personal safety. While the life of a fireman is a hazardous one, the possibility of injury to himself and others can be greatly minimized by the observation of safe practices in handling tools, ladders, appliances, equipment and having a thorough knowledge of proper procedures. From a beginning of familiarizations and the basic fundamentals of rope work, knot tying, making and breaking hose couplings, rolling and carrying hose, raising ground ladders and understanding the necessary commands, a recruit becomes skilled in the mechanics and mental approach to his new work. He will have experienced many hours of actual fire fighting with the most advanced tools. Breathing apparatus, rescue work, advancing lines, aerial and pompier ladder work, master streams and ventilation are but a few of the subjects with which he will become familiar.

Efforts are constantly being made to increase the efficiency of every company on the fire scene. To facilitate this goal, the major emphasis is placed on "in-service training" — the retraining and improving of every man in the fire bureau. Companies return to the academy for a minimum of 40 hours advanced group training each year.

Fire problems are solved under actual fire conditions with company officers exercising command. Critiques are conducted by training staff instructors to evaluate results of these problems and to formulate standard procedures. New equipment is introduced and evolutions are constantly being reviewed and improved.

The introduction of photography in training has contributed immensely toward improving fire scene operations. A training staff officer takes 35mm photos for preparing slides, as well as 16mm movies at all major fires, for the purpose of constructive evaluation and guidance in future in-service training. Personal observation of operations on the fire scene by training staff personnel is a most essential assignment.

In addition to the in-service training with their respective companies,

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The manufacture of Fire Helmets has been our exclusive business for one hundred twenty-four years. Today we are the only manufacturer offering you your choice of helmets in leather, aluminum, or plastic —all of them veterans of fire service—all produced in our own modern factory—and all distinguished by those high standards of design, materials and craftsmanship for which the name CAIRNS stands throughout the fire-fighting world.

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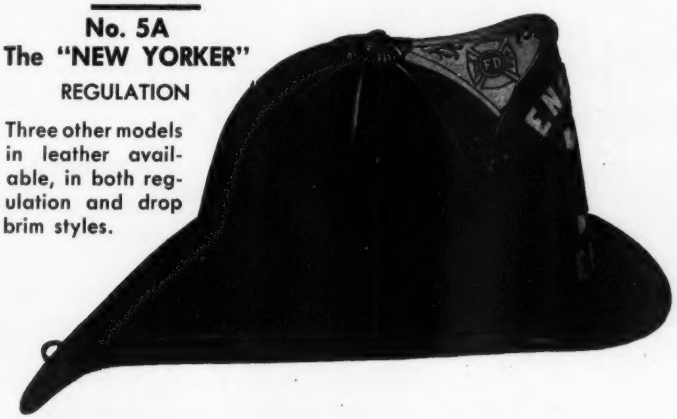

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company officers receive a minimum of 40 hours training in special classes at the academy. These officer training classes cover a variety of subjects. Problems relative to command responsibility and planning receive much consideration. Guest speakers from industry and related fields and lecturers from other services within the Fire Bureau or city departments, such as the Fire Prevention Division, Fire Investigation Division or the Building Bureau may also be included.

Information presented to the company officers tends to serve a dual purpose. The officer may use this information for his own training classes conducted in company quarters. Every company officer is required to conduct a two-hour training session each day and advanced individual training and basic group training is considered company officer responsibility.

A weekly conference-type training meeting for all chief officers and special service heads in the bureau is conducted at the chief's office under the direction of the executive deputy chief. Post-fire analysis contributes greatly to this type of training. The opportunity is presented for every chief officer to freely express his views and thoughts on matters of policy and procedures. Any new appliance or equipment is thoroughly tested by the Training Division and the Engineering Division before being submitted to this group for further evaluation. Complete enlightenment of all command personnel, as to policies and ultimate goals, has been a prime factor for the unity and common purpose in the Fire Bureau.

To satisfy the constant search for improvement of the style and application of tools with which firemen work, the Training Division, in close cooperation with the Apparatus and Engineering Division, devotes a large portion of its energies to experimental work. Recent examples are the master stream tests conducted in cooperation with the NFPA and master stream appliances tested for use on missile bases.

The desire to provide the best in training is not confined to the City of Rochester alone. Through the tireless efforts of the 43 individual fire districts which comprise the Monroe County Fire Service, tremendous progress has been made. The facilities at the Fire Academy are made available to the county to aid in its training programs.

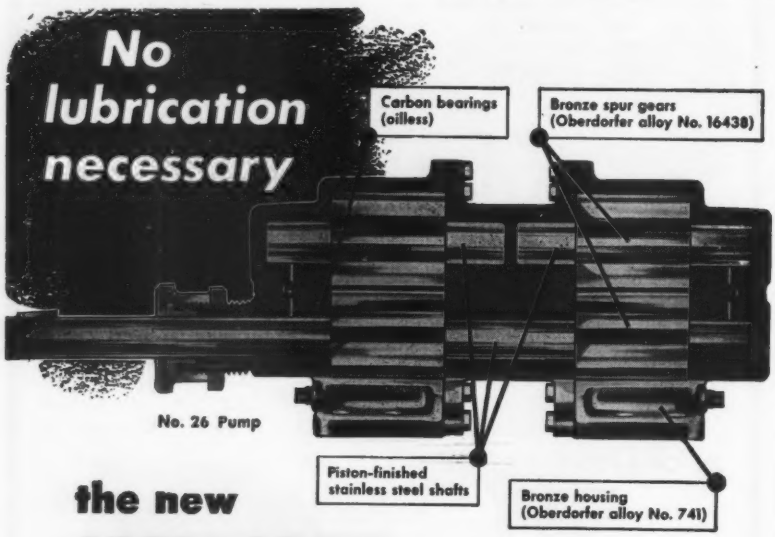
The field of firemanics has become a highly technical vocation in Rochester as elsewhere. Constant improvements in apparatus and techniques make greater demands on the men responsible for the protection of life and property. This quest for knowledge is an ever-expanding and continuing search which is facilitated by the proper equipment to do the work. The training academy provides the means to carry out this important phase of fire protection. □□

Delaware Short Course

Over 290 men attended the 12th Annual Short Course for Volunteer Firemen held May 15 in Camden-Wyoming, Dela. Presented by the educational committee, Delaware Volunteer Firemen's Association, the instructional meeting was directed by Granville T. White of Laurel, assisted by the host, Chief R. G. Foraker. Subjects covered included ladder evolutions, gas mask drill, pumper operations and LP gas fires.

A special program for the ladies auxiliaries was the six-hour course on "Fire Safety in the Home." Ladies from 44 departments in the state heard lectures by State Fire Marshal Robert Favinger; Fire Chief Howard B. Springer, Bainbridge, Md., Naval Training Station; C. D. Goodrich, State Forestry Department; and Miss Mildred Sommer, assistant treasurer, Underwriters' Laboratories, New York City.

K. L. O'Rourke


No lubrication necessary
Carbon bearings (oilless)
Bronze spur gears (Oberdorfer alloy No. 16438)
No. 26 Pump
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OBERDORFER
BRONZE BOOSTER PUMPS

These booster pumps with oilless bearings will last 3 to 5 times longer than the old style equipped with plain bronze bearings. As a result of closer machining tolerances, over 20 feet of suction lift may be depended on.

The No. 13 and No. 26 Oberdorfer Pumps are more fool-proof than they have ever been. When you get to a fire you have something you can count on. It isn't necessary to wear pumps out checking them periodically to see if they will work. These pumps are metering pumps in principle and therefore must produce the same volume for every revolution of the drive shaft.

PERFORMANCE DATA—No. 26 and No. 13 PUMPS

Pump No.	Pump Shaft R.P.M.	Pounds Pressure	Hose Length and Size	Dry Suction Lift in Feet	Vol. in Gal. Per Minute
26	1600	120	500'—1½"	20'	150
13	1600	120	500'—1½"	20'	75

LIST PRICES —No. 26—$249.50 No. 13—$122.50

Slightly higher west of Rockies

FIRE PUMP DIVISION, Oberdorfer Foundries, Inc., Syracuse, N. Y.

FIRE PREVENTION

Continued from page 712

or referral made to another bureau if the condition does not come within the fire bureau's scope of authority. Generally one week is allowed for correcting violations, but in serious cases where immediate correction is necessary, the time may be shortened. If the condition is not serious and if deemed allowable, the time is extended.

Call-back is made at a specified time to ascertain compliance. In cases where correction is not made promptly, the matter is referred to the deputy fire marshal or captain for concentrated attention. Further failure to comply warrants notification of the corporation counsel for court action.

Dwelling inspections instituted

A program of inspection of private dwellings upon request of owner or tenant was instituted about a year ago. Written permission is required and kept on file by this office, as authority to inspect such private dwellings is not granted by any existing state or local law. The type and extent of such inspection is the same as authorized by law for other residences. However, corrections deemed necessary are presented in the form of recommendations rather than orders.

In addition to regular fire prevention inspection work and other special functions, the division supplies and takes an active part in the presentation of information on fire safety for press, radio and television releases. While not constituted as the fire department public information office, it is noted that such activities are valuable for public relations purposes. □□

Los Angeles Actuates Salvage-Rescue Company

A new type of dual service unit has been put into service by the Los Angeles City Fire Department. Squad 5 has been activated to serve the Westchester-International Airport Area as a rescue and salvage company. The two-man company will operate a rig which will carry a new lightweight resuscitator and other rescue equipment in addition to salvage equipment.

The L.A.F.D. will consider future establishment of similar units. The department currently operates six rescue-ambulance units in the San Fernando Valley, five regular rescue companies in metropolitan Los Angeles, West Los Angeles and the Harbor Area, and a number of salvage companies throughout the city.

—Cliff Dektar

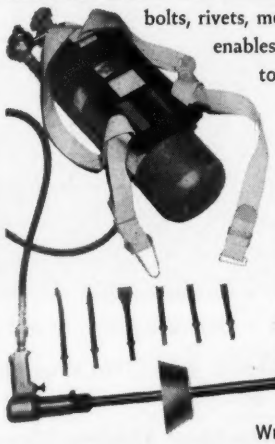
New GLASS-BLOCKSMASHER Tool

Glass Block construction that defies axes and other usual fire-fighting equipment, breaks out readily under the impact of this new, easily handled tool. The GLASS-BLOCKSMASHER is designed to smash a large opening in *both front and rear surfaces* of glass blocks in a matter of seconds.

Operating from a special tank of CO^2, the entire apparatus weighs less than 50 lbs. and can be readily carried on a man's back to be operated from a ladder as easily as on the ground.

Versatile: Rescue Kit and Shop Tool

The air gun which drives the GLASS-BLOCKSMASHER can also be used for other emergency procedures or rescue operations involving motor vehicles, air craft and civil defense. With accessories provided, it can cut car doors and fenders, cut bolts, rivets, metal sheathing, open metal drums and the like. The tank enables the use of the BLOCKSMASHER for some thirty-six to forty-five minutes of intermittent use. The smaller tools, which characteristically require more steady use, will use up the gas supply in about twenty minutes. The various accessory tools will find many uses in your shop where the gun can be attached to any convenient source of 90 lbs. pressure.



The GLASS-BLOCKSMASHER Kit includes the B20 Glass Block Breaking Tool (Patent Applied for)—the basic Air Gun to drive it—a 15 lb. CO^2 tank with regulator preset to 90 lbs.—a specially designed harness, and 6 feet of reinforced rubber hose fitted with a Quick Connector. Price complete: $395.

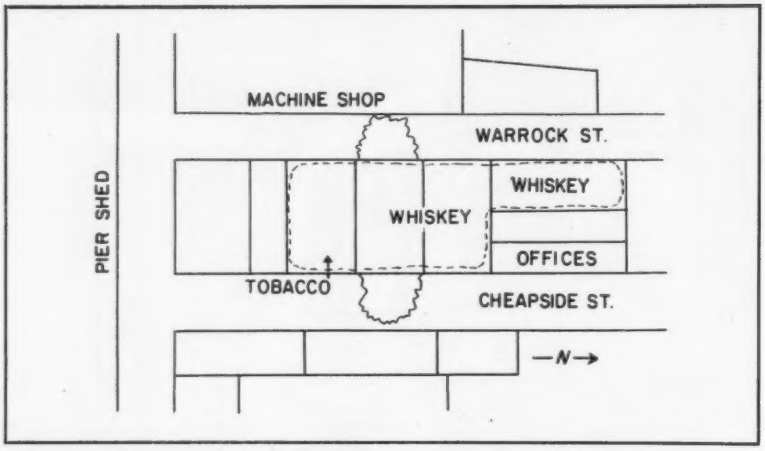
Accessory tools—chisels, punches, and a carrying case for all equipment—are available. Write for prices and information.

Write for prices and information.

Boston Clip and Tag Company
47 Grove Street, Somerville 44, Mass.

Clean-cut, clear, white Register Bond (15# Sulfite) in standard rolls delivered immediately from stock.

For All Single or Multiple Registers



BONDED WAREHOUSE EXPLOSION

Continued from page 764

columns. One, a 100-year-old building, had been reinforced with a structural steel frame to hold the heavy load of liquor storage. Three of the buildings ran through the block, fronting on two streets in the old congested area along the docks in the Anderston district. Cheapside Street is 35 feet wide and Warrock Street only about 25 feet. Solid fire walls separated the structures, but these were pierced by several openings with fire doors.

As is common in bonded stores, as few as possible windows and doors were provided. Part of the area had once been occupied as an oil cake mill, leaving the floors oil-impregnated. A considerable part of the storage was said to be arranged in self-dumping barrel racks arranged to roll the barrels toward the unloading point. The liquor stored is believed to have been mainly of the undiluted variety with its potently high alcohol content. It has not yet been brought out whether there was any vatting, or mixing carried out.

The fourth warehouse, on the south end, was used as a bonded store for tobacco leaf. Across Cheapside Street was a storage warehouse for empty barrels and other storage buildings beyond. On the opposite side, across Warrock Street, was a huge one-story shop building of Harland and Wolff, shipbuilders. The whiskey bonds were operated by Arbuckle Smith Co.

The fire, which burned for several days before being completely quelled, broke out in the evening of March 28. At the time of discovery, several employees were working in one of the whiskey bonds. Unable to find the source of smoke in the building, they called the fire brigade.

As the result of the loss of many of the men on the scene, the complete story of the early stages leading to the explosion has not been forthcoming. The divisional officer in charge of the initial response of two aerial ladders and two pumpers found the whiskey bonds charged with smoke and called for three more pumpers.

He toured the southerly building

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Dodge Chassis. 2000 Gallon Tank. 750 GPM Waterous Electro-Matic Pump, Compartments & all Pumper equipment

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P. O. Box 783, Mt. Clemens, Michigan.

seeking the fire while lines were laid and men with breathing appartus prepared for action in the heavy smoke. The officer then moved into the next building, and while inside, heard the explosion which shattered the one he had just left.

The blast flung the lower floors of the two end walls right across the two narrow streets. Blazing barrels covered the tops of the 15-foot-deep piles of rubble. On Cheapside Street, a new 100-foot aerial truck and most of the firemen were buried. On Warrock Street, the other aerial crew had just elevated their ladder when the wall came crashing down into the street. It was on this side that the five salvage company members were caught. Several pieces of apparatus were damaged in the fire in addition to the loss of the two aerials.

Rescue efforts impossible

There was little that could be done in the way of rescue, with so many of the men lost beneath the fiercely blazing debris. After the initial blast, a call was put in to "make pumps 15." Eventually all available strength was brought to the scene to operate under the direction of the Glasgow firemaster, Chief Fire Officer Martin Chadwick. Mutual aid was brought into effect and a fireboat relayed water ashore as the fire forces tried desperately to cover the exposure on all sides in a rising wind with whiskey beginning to burn in the streets. Coordination of operations became very difficult with both streets blocked by fire, falling walls and minor explosions.

The fire gradually penetrated the tobacco warehouse and all the whiskey storage. Outside of the four principal bonded warehouses, however, all exposures were successfully controlled with minor damage. The inferno blazed brilliantly all night, the whiskey making a towering flare, largely smokeless. Heavy streams were worked from aerial ladders, nearby roofs and the narrow streets. Not until the next day was it possible to commence clearing a way into the rubble.

The exact circumstances of the fatal explosion will not likely be determined. It is assumed to have been caused by alcohol vapors, and took place on the lower floors. Firemen were in the building around the time of the blast and perhaps they provided the necessary draft. Could the falling of barrels have liberated a sudden concentration of vapor? Whiskey of this type has a generous explosive range. Perhaps the several official investigations will shed some light.

The fire was discussed in the House

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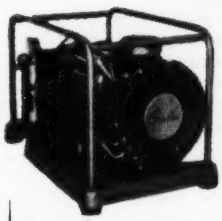

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of Commons and questions raised on the subject of whiskey storage in congested areas. Restrictive legislation may well result and undoubtedly storage arrangements will be restudied by fire protection authorities. In Britain, whiskey storage has been considered a good risk as the record was good and management careful. Leakage is always checked on very closely and good ventilation maintained in storage areas. It is believed that a barrel of whiskey will not explode when heated. Warehouses are closely supervised by customs as well, and are not heated.

The Glasgow fire is reminiscent of the fire in Pekin, Ill., in 1954, when a large whiskey rack warehouse charged with smoke suddenly blew up, killing six firemen. Here also, the circumstances of the explosion were not determined. At least, where a sudden concentration of alcohol vapors came from, is not explained.

An assistance fund was immediately launched by the mayor of Glasgow to augment the pensions of the firemen's families. Delegates to a meeting of the national firemen's union, who had just won a pay increase, voted to give the raise on their first paycheck to the fund, a sum reported to be approximately £21,000 or $59,000.

Inquest testimony following this fire indicates the blaze may have occurred by either a dropped light or an electric fault. Flames then triggered vaporized whiskey. □□

Victims of Fire Engine Crash Get Award

A recent California court decision awarded a total of $186,500 in damages for the death of one woman and injuries to four other persons caused by the collision of two Los Angeles City Fire Department apparatus while answering a false alarm in 1958. The accident occurred when one truck was struck broadside by a second at a street intersection. The first vehicle then careened into and crushed one automobile and damaged another stopped behind. The decision was against the City of Los Angeles.

Cliff Dekter

Purdue Holds 16th Annual Arson Seminar

The Public Safety Institute, Purdue University, Professor Shelby Gallien, director, held its 16th Annual Arson Seminar during the last week in April. Approximately 200 persons from all parts of the 50 United States attended. In addition, there were registrants from Canada, Venezuela and Thailand. William Rossiter, State Fire Marshal of Wisconsin, and president, International Association of Arson Investigators, was the keynoter.

MASTER DISPATCHING SYSTEMS

Continued from page 701

the success of this arrangement and the acknowledged mutual benefit to city and county is to cite the fact that the new $200,000 master dispatching system will be paid for entirely by funds from Monroe County, and the equipment will be housed at the control center of the Rochester Bureau of Fire.

The new system, designed by General Railway Signal Company, will provide an exceedingly well-equipped nerve center to handle the growing requirements of the city, and the even faster-growing county dispatching requirements. Three basic elements are included in this center, as shown in Fig. 1:

1. A new dispatchers' console which will be the hub of dispatching activity and will contain within its U-shaped structure facilities for both ordinary and extraordinary dispatching operations.

2. A fire apparatus locater map (19), which rises to ceiling height, and which provides an electronic display showing the status of all fire and emergency equipment in the county and city fire stations.

3. A supervisory enclosure (1) for use by supervisory fire chiefs in viewing and monitoring any large-scale dispatching operations.

The supervisory enclosure is a self-contained, soundproof, air-conditioned area where the supervisory fire chiefs can observe and control the dispatching operations with maximum effectiveness without physically crowding the dispatching area. Complete monitoring of all four telephone locations and both radio frequencies is provided for these personnel. An intercom line with the two radio dispatching locations is also available to the supervisors, plus the ability to use an extension off the four emergency telephones described later.

Dispatchers' console

One of the primary functions of this console will be to display the status of all fire apparatus in the county and city. Eight panels — four on the left (city) and four on the right (county) side of the console—are devoted to the display of this information. Each of the four display panels — In Quarters, On Assignment, On Air, and Off Duty — contain jacks, also called receptacles, into which coded tokens (Fig. 2) are inserted. These tokens, one for each piece of apparatus, are identified by color and number to show the type and identification number of the equipment. The positioning of a token into its respective jack in any of the four panels indicates to the dispatcher the status of that particular piece of equipment. At the same time, the code carried by each token is automatically decoded by the electronic system to cause the proper display on the fire apparatus locater map as described later.

Fill-in moves for both county and city are also displayed on the console, on panel 21. This panel serves to display the identification number and type of apparatus which is filling in at another firehouse location. This is

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accomplished by taking a fire station token (similar to the apparatus token in appearance) from the station panel (22) and inserting it into a station jack in the fill-in panel. Any apparatus token (county or city) may be inserted into the apparatus jack located adjacent to the station jack. This visually indicates to the dispatcher the identity and location of fill-in apparatus. This data is also transferred automatically to the locater map.

Another primary function of the console is the centralization of all controls for radio and telephone communications. The city and county dispatching operations will center about panels 18 and 24, respectively. At these locations will be found all the remote controls for radio transmission utilizing any of the five transmitters which are the primary means of fire dispatching.

Each communications panel will also contain a nine-line telephone key turret in parallel with the main switchboard (6). Two buttons (labeled county and city) on the main switchboard will enable the switchboard operator to direct incoming fire calls immediately to the proper dispatcher by a simple fingertip operation. The center will have the ability to answer four simultaneous incoming calls (two at the dispatchers' positions and two at the main switchboard) on the main fire telephone number. Each of these positions will also have an independent desk-top telephone which will be used to make outside calls on the administrative telephone number.

Adjacent to each radio panel are the county and city call panels (23, 20, respectively). At these locations, automatic selective or group-call push buttons have been provided to call key fire personnel in the city or all fire districts in the county. This is accomplished by depressing a push button bearing the name of the fire district. This single operation automatically selects a four-digit tone code, clears the air, and results in the activation of a siren in the selected county fire district. Manual operation of a selective call on a tone-by-tone basis is also provided in each panel, so that seldom used codes may also be set up and utilized. Each selective call panel is a completely independent unit, which means that simultaneous selective-call transmissions can be effected on either the city or county frequencies.

Emergency telephones

Readily accessible on the county side of the console near the main switchboard are four emergency telephones—two outgoing and two incoming. These telephones are on exchanges different from the exchange used for reporting fires on the main switchboard. These independent telephones are included to permit continuous telephone communication in case of main switchboard failure.

The fire dispatching center is also the Civil Defense warning point for Monroe County and the five adjacent counties. Two special telephones and radio receivers used for this purpose are conveniently housed in the console.

An existing facility of the center is a 29-circuit Gamewell telegraph alarm system which serves the 590 city fire alarm boxes, and which incorporates transmission facilities to all city firehouses for purposes of dispatching fire apparatus. The transmitter controls for this system have been included on panel 14 of the console within easy reach of the city dispatcher.

Incorporated in the new dispatching system are three new fire alarm telegraph and time recorders for use as incoming, outgoing, and ground master registers for the box alarm system. These registers (13) are housed in the console for easy viewing, near

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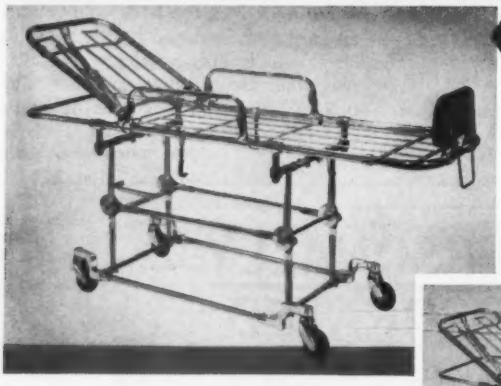

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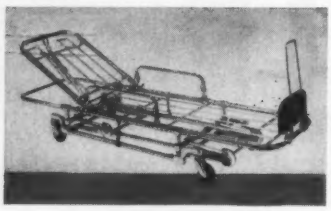

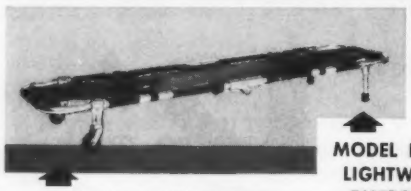

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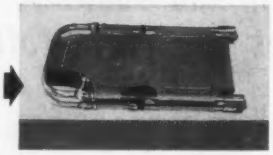

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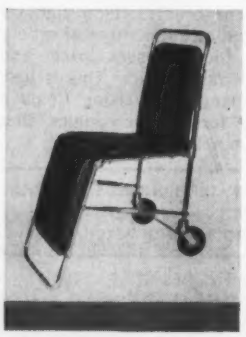

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the telegraph alarm transmitter controls.

Located within the console are seven active voice recorders, plus a spare recorder. These are used for monitoring the main switchboard, the county and city telephone turret locations, the National Civil Defense telephone, and county and city radio transmitters.

The system will also include new street reference guides (35, 36) for the city and county dispatchers. These use portable indexing systems, located directly adjacent to the dispatcher's position for ease of accessibility and viewing. As Fig. 3 shows, the visible portion of each card indicates the street, any cross references, the apparatus assignment for first and second-alarm fires, and the box alarm associated with that location. The city street reference system also contains the apparatus assignments for all ADT-protected locations plus all fire alarm boxes.

Locater map

The 8-foot by 8-foot fire apparatus locator map shows the geographical location of all firehouses and associated apparatus of Rochester and Monroe County, both regular and fill-in, under the jurisdiction of the dispatching center. Each piece of equipment is identified by its number and type, by means of a numbered, color-coded indicator light. The lights are grouped in clusters at the approximate location of the house in which the equipment is stationed. In addition, as shown in Fig. 4, Post-Rite electro-mechanical data display indicators are mounted to the right or left of each cluster of lights. Each can display any digit between 0 and 9, as well as a "blank" display. By using three of these units side by side, it is possible to display the identification number of any fill-in apparatus located in that house, since these numbers never exceed three digits.

The operation of the apparatus indicator lights and fill-in data indicators on the map automatically follows the action of the dispatchers as they manipulate the apparatus tokens on the eight console panels. A totally unlighted map indicates normal condition—that is, all fire apparatus is in quarters. A steady indicator light shows that the associated piece of equipment is on assignment. When that same indicator light is flashing at a fast rate, this indicates that the apparatus is on air, and available for duty. A slow flashing light indicates that the piece of equipment is off duty.

The normally unlighted data units become lighted when the dispatchers post the identification number of fill-in

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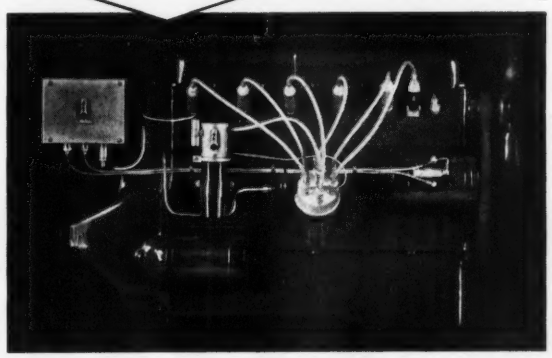

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apparatus. The size and importance of the fire station govern whether one, two or three fill-in displays will be provided for in the house. The map includes a minimum of three data indicators for each of the 74 fire stations in the city and county. Twenty-two houses have six indicators while two others have nine indicators. As the dispatchers manipulate the house and apparatus tokens on the fill in panel, the corresponding information on fill-in apparatus number and house location automatically appears on the map.

The token positions provide the dispatcher a high-visibility display of the status of apparatus. But, in addition, the electronic map gives the dispatcher, and especially the supervisory personnel in the enclosure, a geographically significant display of the location and status of equipment. Fill-in determinations can be made more easily and intelligently on the basis of the information on unprotected areas which the map provides at a glance. Moreover, the map makes it possible for supervisory chiefs, when a large fire is in progress to evaluate the situation immediately.

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As mentioned earlier, the primary method of dispatching is by the use of high-band radio frequencies. Two county 250-watt transmitters, operated on 154.31 megacycles, are located at Cobbs Hill, the highest point in the city, and are connected to the control center by leased lines. The new dispatching system includes the installation of two new high gain omni-directional antennas on the tower at Cobbs Hill to improve the propagation to the county areas. Additional radio facilities, currently being installed as part of this new system, include a 250-foot tower on the premises of the control center. This, along with the two new 250-watt transmitters, will serve to dispatch apparatus in the city on 154.13 megacycles. A 60-watt transmitter is also available as a stand-by facility. Although normally assigned to a selected frequency, any transmitter can be used for dispatching on either city or county frequency. Low-band reception on 46.10 megacycles is also being provided, to enable the dispatching center to have communications with the adjoining county control centers. Complete controls for use of the radio communication facilities are included on the dispatchers' control console, right at the dispatchers' fingertips.

The radio facilities available for dispatching constitute a powerful and flexible network. The telephone arrangement, as described earlier, is also a well-planned functional system; and these effective systems of general communication are supplemented by radio tie-in with the larger manufacturing plants and the Rochester Gas and Electric, and by direct telephone tie lines to police, sheriff, civil defense, Rochester Gas and Electric, public works, and ambulance services.

The power for this vital equipment is fed from two independent transformer sources. In addition, a 25-kw, 110-volt automatically started propane engine-generator is available as an emergency power source, while a stand-by battery is available for the telegraph equipment.

Conclusion

The new fire dispatching center will meet the needs of the ever-growing mutual aid program. The master dispatching system has been designed not only to handle current dispatching problems, but also to provide space for the addition of new equipment as it appears.

While this new system is being installed, the Rochester Fire Bureau, in cooperation with one mutual aid fire district, is engaged in experimentation with methods of verifying the

actuation of sirens set off by selective call. Upon the successful conclusion of this work, the dispatching center will have a visible as well as an audible indication of siren actuation.

The physical arrangement of the large control center has been planned for maximum efficiency. Further, the room has been completely renovated by repainting the area, and by installing modern lighting, a new tile floor, and air conditioning throughout.

The new improved telegraph and telephone arrangement, the installation of two new radio transmitters and the 250-foot tower, the addition of another selective-call unit, expedited selective calling by single push-button operation, the unique display of apparatus status on the console and map—these are the tools which the dispatchers and supervisory personnel will use to make more effective their dispatching services. □□

AUTOMOBILE PUMPING ENGINE

Continued from page 723

driven by internal-combustion engines were hand and horse-drawn vehicles of small capacity, and when the automobile fire engine first appeared it did not propel itself with the same engine which drove the pump.

Waterous Fire Engine Works, of St. Paul, (now Waterous Company) were the pioneers in hitching an internal-combustion engine to a fire apparatus. Their hand and horse-drawn machines with a single-cylinder gasoline engine clutch-connected to a small rotary pump were introduced in 1898 and manufactured until 1907. These engines found a good market with volunteer fire companies which could not afford the luxury of steamers, but had long wished for some way to beat the back-breaking job of hand-pumping.

In 1906 Waterous tried out the idea of mounting a second engine and a pump back of the seat on an automobile chassis and built an apparatus of this kind for Radnor Fire Company, of Wayne, Pa.,—the first automobile pumping engine, and the first fire apparatus with left-hand drive.

There were many problems involved in producing a successful motorized pumper with single engine for propulsion and pumping. Engines that were satisfactory for automobiles and trucks were not suitable for pumping service. Rotative speeds were slow and to develop sufficient horsepower engines of great size and weight were required. Such items as special brakes, transmissions, axles and air starters had to be developed. Fire engine man-

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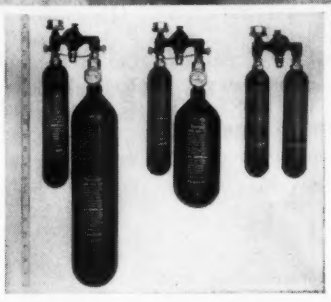

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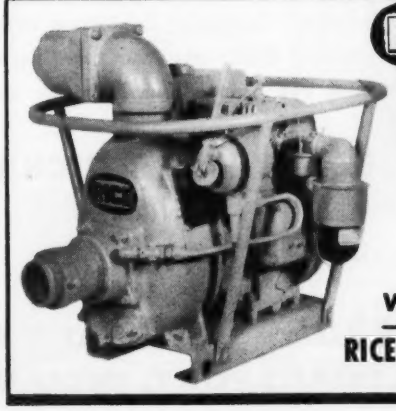

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ufacturers had to design and build these engines and accessories themselves.

After making a number of designs and building several experimental models, Waterous delivered a four-cylinder 600-gpm motorized pumper to Alameda, Calif, in 1907—another "first"—the pioneer automobile pumper with a single engine. The pump was a V-type four-plunger affair, with the valve chamber across the open part of the "V."

Webb pumper

In early 1908, Chief Hugo Delfs, of Lansing, Mich., learned that Webb Pump Company, of St. Louis, was experimenting with an automobile pumper on which the propulsion engine was also to be used to operate the pump. Chief Delfs interested his commissioners in the idea of having Webb build a combination hose and pumping apparatus of this kind on a Lansing-manufactured Oldsmobile chassis.

After exhaustive tests this 500-gpm apparatus was put in service December 17, 1908 at Station No. 2—the first fire engine with a rotary gear pump mounted across the frame and driven by the propelling engine through the vehicle transmission. It was also the first automobile combination pumper and hose carrier. The contract price was $6,500.

Officials came from all over the country to see Lansing's Webb fire engine. Chief Delfs, one of the most friendly and hospitable of men, gave demonstrations of the "machine" for all interested visitors.

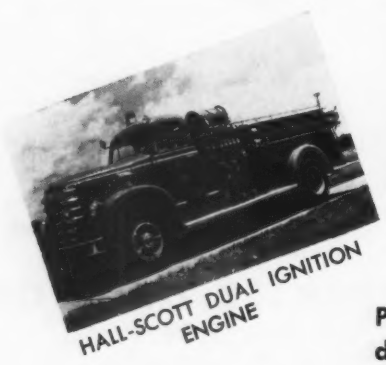
The International Association of Fire Engineers—now the IAFC—held their 1910 convention at Syracuse, N. Y., and for the first time automobile pumpers were exhibited. Seagrave had shown a motorized aerial (side-seat model) at the Columbus convention in 1908, and a Westinghouse horse-drawn gasoline pumper was also demonstrated, but gasoline-propelled pumping engines made their initial appearance at an International convention in 1910. Luitweiler Pumping Engine Company, of Rochester, showed a weird looking apparatus with all of the space from the seat to rear wheels taken up with a three-cylinder double-acting piston pump driven by spur gears off of the main shaft. All of this mechanism was open to view for the entire length and over it, supported about 2 feet above the frame, was a hose body.

Webb, of St. Louis, who had organized the Webb Motor Fire Apparatus Company, with factory at Vandeventer and Washington Avenues, also gave demonstrations around the city during the Syracuse convention of an apparatus similar to the Lansing pumper.

"The Giant"

In 1911, the year before New York bought its last lot of steam fire engines, the FDNY accepted a proposal from Waterous to furnish a 700 gpm pumping engine which, because of its tremendous hood was named "The Giant" by the newspapers, receiving so much publicity that it was soon famous. "The Giant" was installed at Engine Co. 39 in the old headquarters on East 67th Street with ceremonies and speeches hailing the new era of gasoline-powered fire engines. "The Giant" was a straight pumping engine with the four-cylinder single-acting piston pump installed in a body back of the driver's seat, and driven by direct gear drive from the transmission. The motive power was a gigantic six-cylinder 7½-inch bore x 8-inch stroke engine, cranked by a Christensen compressed-air starter.

Another experiment made by the FDNY in 1911 was the installation of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a Nott automobile steamer at Engine 58. This was not a tractorized job, but a new steam fire engine originally built with gasoline engine drive through transmission, differential and chains to the high rear wheels of the steamer. The Nott automobile steam pumper was not a success and was soon withdrawn from service. Both the Nott and the Waterous "Giant" (which was wrecked against an elevated pillar) were replaced by tractorized steamers within a couple of years.

Nott automobile pumping engine

By the time the era of the steam fire engine had come to an end in 1912, the Nott Fire Engine Company had already turned their attention to the building of automobile pumping engines and had developed a piston pump suitable for gasoline engine drive—a triple-cylinder double-acting pump of 1000-gpm capacity—and had built a streamlined apparatus which was described as ultramodern in design. At a test in 1912 this pumper was reported to have actually delivered 1,275 gpm at 171 psi, 900 gpm at 220 psi, and 750 gpm at 250 psi.

Nott offered to deliver an engine of this type to any city on approval "if we make good our claims and contentions the city to accept and pay for the engine." The engine was shipped to Battle Creek, Mich., on this basis, but was rejected because of excessive vibration in the delivery tests. As far as we know, it was not sold elsewhere.

Nott had also designed a "rotary-roller, dual or single-acting pump of 600 and 800-gpm capacities, and continued their sales efforts with this type. These were the apparatus entered in the 1913 tests at the New York convention of the IAFE, where they completed the 12-hour run with satisfactory scores. The first combination hose and pumping engine in the FDNY was the Nott rotary put in service at Engine 160 in 1915.

The suggestion for the 1913 trials of gasoline pumping engines under the control and supervision of the International Association of Fire Engineers was made by the Committee on Exhibits for the New York convention and arrangements were completed with the cooperation of the National Board of Fire Underwriters and the New York Convention General Committee headed by Chief of Department John Kenlon.

The tests were held September 3rd at Pier 54 on the Hudson River adjacent to the FDNY Shops on Twelfth Avenue, where the competing engines were stored and serviced. The trials began at 6 a.m. and were for a continuous run of 12 hours—a very severe

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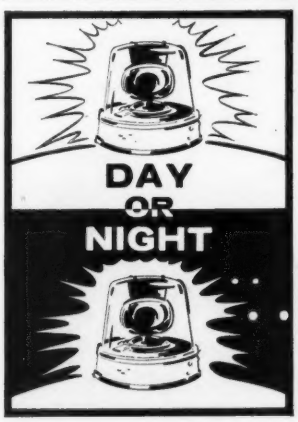

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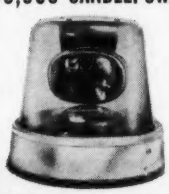

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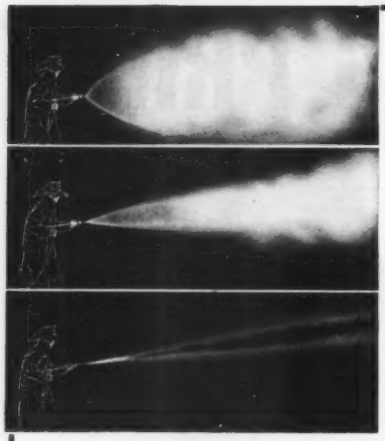

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test for the automobile apparatus of the period. Among the author's mementos are the program and score card for hourly recording of the performance of each machine. Four of the engines dropped out before the tests were completed, and others were shut down for varying periods for repairs.

The entries were—

No. 1—Seagrave 1,000-gpm, 3-stage centrifugal, 11-inch empellers
2—Ahrens-Fox 700-gpm, 2-cylinder piston double-acting
3—American-LaFrance 700-gpm rotary
4—Luitweiler 600-gpm, 3-cylinder piston double-acting
5—American LaFrance 1,400-gpm rotary
6—Knox 600-gpm, 2-cylinder piston double-acting
7—Nott 600-gpm rotary-roller dual or single-acting
8—Robinson 750-gpm, 3-cylinder piston single-acting
9—Nott 800-gpm rotary-roller dual or single-acting
10—Robinson 900-gpm, 3-cylinder piston single-acting
11—Waterous 700-gpm, 4-cylinder piston single-acting

It will be noted that there were one centrifugal, four rotary and six piston pumps entered, and that only three of the builders are still active in the fire engine field.

The program referred to the Ahrens-Fox pump as a two-cylinder double-acting "steamer" type. This was the Model A. In designing this pumping engine Mr. Fox stuck as closely as he could to the highly developed pump of the Ahrens-Fox Continental steamer, and used many of the steamer parts and patterns in building the Model A pump. The gasoline engine did not, however, have the flexible smoothness and speed range of the steam engine and in later models Mr. Fox developed four and six-cylinder pumps with major and minor diameter cylinders which could be used selectively to supply volume or pressure.

(*To be continued*)

Nevada Firemen Elect

During the 25th annual convention of the Nevada State Firemen's Association in Elko, June 9-11, Carl Olfers of Lovelock was elected president, succeeding Z. A. Williams of Elko. Other officers include Gary Barton, Hawthorne, first vice president; Jim Newell, Yerington, second vice president; and directors, Don Childress of Fallon, Don Richards of Henderson, Don Moore of Reno and Williams.

E. W. Fair

RUSSWOOD PARK FIRE

Continued from page 728

Summer Avenue Viaduct, at least 5 miles away. Engine No. 9, a first-alarm company, had to be pulled off a hydrant in front of Baptist Hospital, before it caught fire from radiated heat. As it was, the paint on one side of the apparatus was badly blistered and several hose lines on Madison caught fire.

By the time the third and fourth alarm companies arrived on the scene, the fire had complete possession of the grandstands, and had already involved four other buildings on the north side of Madison. Windows on the ground floor of the Madison East wing of Baptist Hospital were broken by the heat, and fires were started in draperies and furnishings on the north side of the ground floor. These fires were quickly controlled by the use of interior standpipe lines.

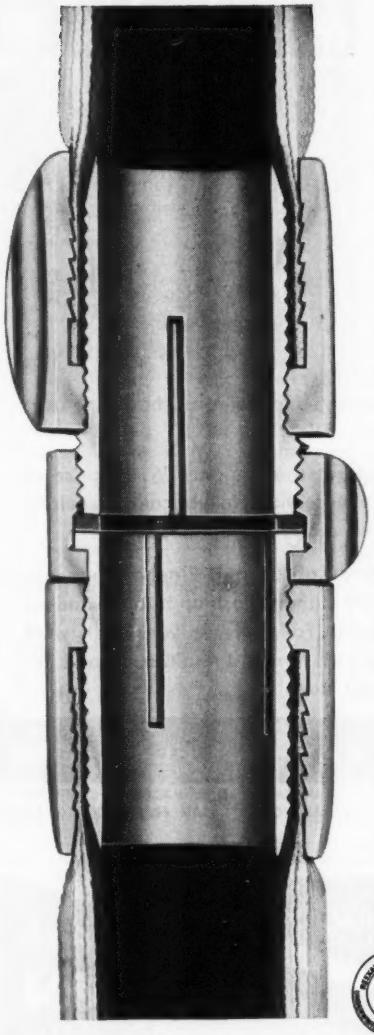
Twenty minutes after the first alarm had been sounded, flames were going above the roof of the Baptist Hospital, and Madison Avenue itself was all but impassable. The wind in front of the hospital building was so strong that walking was an effort.

Heavy structural damage to exposed buildings (on the north side of Madison) occurred as the result of fire simultaneously entering practically all windows on the north and east sides of the buildings. Likewise, fire entered both the first and second floors of the two-story buildings, and attic sections also became involved when roof structures caught fire. In at least one place, an air-conditioning water cooling tower (wood construction) caught fire and burned completely, starting fires both on the roof and in the attic below.

Damage by radiated heat

All exposed buildings had brick walls which were severely damaged by radiated heat and direct flame contact. The two-story Russwood building at 926 Madison suffered heavy damage to masonry walls. Much of the concrete and brick in the rear (north) wall was chipped, spalled or cracked. The east wall of this building separated from the rear building at the northeast corner.

A contributing factor to the heavy exposure damage was the inability of the fire department to use interior lines in the various buildings to limit the damage, or to use heavy streams at the rear as a water curtain. This was due to the very rapid spread of the fire, together with the large amount of heat which made it necessary for fire fighters to first work around the perimeter in an effort to break up the



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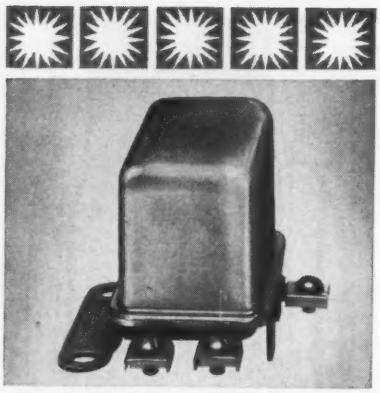

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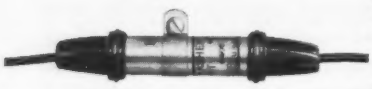

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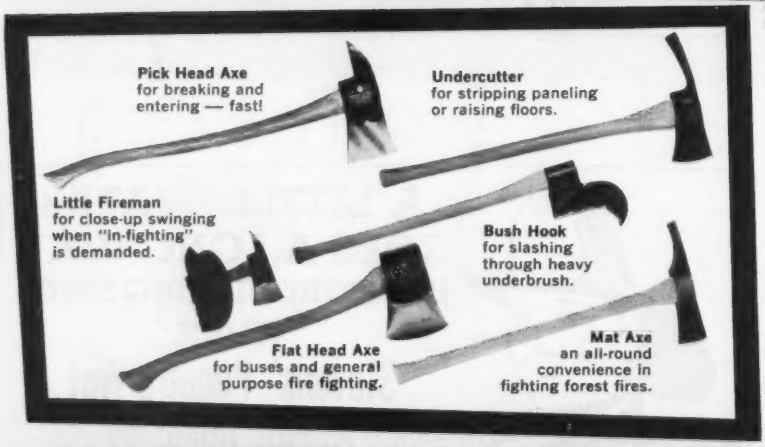
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radiated heat. At the time the exposed buildings became involved, it was almost impossible to bring hand lines or even heavy streams to bear on the fire.

Once the amount of radiated heat and open flames from the grandstands had died down some, deck guns and applicators were put into operation on the exposure fires, which were controlled without further difficulty at about 9:30 p.m.

No injuries occurred, despite the fact that 250 patients were moved at the Baptist Hospital, and 68 infants at John Gaston, a credit to hospital personnel. It was reported that about a dozen patients at Baptist had to be treated for smoke inhalation.

Damage to exposures

The building at 900-904 Madison, a two-story brick joist, stores on first floor, apartments on second, suffered heavy structural damage to roof, second floor rear, walls and interior finish. Building at 906-908 Madison suffered similar damage.

The building at 912-914 Madison, a one-story brick, wood joist, suffered very heavy structural damage to roof, walls and ceilings. Building at 922-934 Madison, a two-story brick, wood joist and steel, suffered extremely heavy structural damage. Parts of rear wall failed, the east wall cracked and pulled out of plumb. Parts of the roof and second floor collapsed and contents of the second floor were practically a total loss with heavy contents loss on first floor due to smoke, water and fire.

The building at 944-948 Madison, a one-story brick, wood joist structure, suffered heavy structural damage to roof, rear wall and west wall, which was cracked and pulled out of plumb. Contents of stores at 944 and 946 suffered fire, smoke and water damage. Bank offices at the extreme east end of the building (948) suffered only smoke and water damage, as a fire wall separated this from remainder of building.

The John Gaston maternity building suffered some damage from fire, mostly wood window sash which burned, and glass which cracked and fell out; also smoke and water damage on upper floors from hose streams.

The fire-resistive Madison East wing of Baptist Hospital suffered some fire and smoke damage on ground floor, due to fire entering through windows. There was some loss to contents from standpipe hose streams.

Windows suffered heavy damage on the north side of the building from radiated heat. It is estimated that about 99 per cent of these will have to be replaced due to cracking or

breakage. All were the "Thermo-Pane" or "Twindow" type, a double sheet of glass with an insulating air space in between. It should be noted that these windows held up very well under the severe fire conditions, and undoubtedly prevented entry of fire into the upper floors of the hospital.

Russwood Park itself is practically a total loss, as far as grandstands, locker rooms and other facilities are concerned. Unprotected steel, plus a large amount of combustible frame construction combined to result in the almost complete failure of steel work and some reinforced concrete sections. Other portions of reinforced concrete were badly spalled, with the reinforcing steel showing; still other parts simply disintegrated.

Flying brands started more than a dozen other fires in the area, and resulted in a second-alarm fire more than an hour after the Russwood fire had been brought under control. Where a company could be spared, it was dispatched to cover a secondary fire. These are shown in the table.

Large group of spectators

On the afternoon of the fire, some 7,000 people had watched an exhibition baseball game at the park. Many times this number came to see the park burn. After an intensive investigation of the fire, Chief Edward A. Hamilton reported that the fire started in a "catch-all" area near a tool shed under the northwest section of the stands. There was evidence of paper, boxtops, old newspapers and other debris in this area. A cigarette or cigar could have been the actual cause. □□

Acknowledgement: The editors wish to express thanks to Chief Edward A. Hamilton and District Chief C. L. Scott, drillmaster, Memphis Fire Department, for the material on which this article is based, and to Lieutenant Richard M. Adelman, Training Division, who wrote the report.

Secondary Fires Caused by Flying Brands and Sparks

Time	*Location*	*Type Building*	*Damage to*	*Equipment Used*
8:00	1011 Union	Quonset hut	Same & contents	Two 2½-inch lines
8:15	Dudley & E. Moreland	Trash	Same	Booster—Eng. 20
8:21	216 Pauline	1-story brick	Awning	Booster—Eng. 22
8:21	959 Madison	1-story brick	Roof	Pump can
8:22	972 Union	1-story brick	Skylight	Booster—Eng. 20
8:31	193 Pauline	1-story brick	Roof	Booster—Eng. 22
8:53	251 S. Camilla	1-story frame	Garage	Out on arrival
11:20	1011 Union	1-story frame	Building & contents	Three 2½-inch lines

APPARATUS SURVEY

Continued from page 726

but by aerials. In addition to these replacements, respondents indicated that they believed 27 additional ladder trucks were needed. Here again, the majority favor aerials over service ladder trucks.

Exactly half of the 210 hose wagons reported are 15 or more years old. Only 31, however, are listed for replacement and only 27 additional rigs are considered necessary. Survey replies indicate that when these potential 58 purchases are made, in a large majority of cases a pumper or a triple combination will be purchased.

While returns indicate that the purchase of 73 pumper-ladders is contem-

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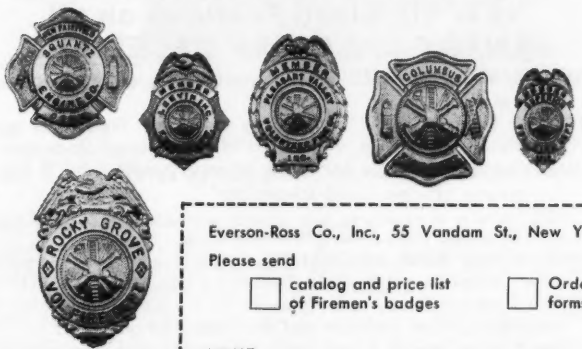

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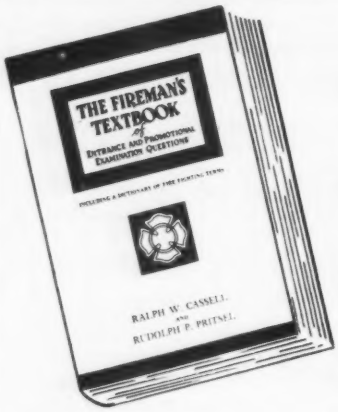

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Pumper-Ladders	3,403
High-Pressure Fog Pumpers	1,487
Aerial Ladder Trucks	7,191
Service Ladder Trucks	1,963
Crash Trucks	534
Hose Wagons	2,499
Water Tank Trucks	3,415
Rescue Trucks	4,605
Ambulances	3,522
Squad Cars	1,457
Foam Trucks	618
Lighting Trucks	1,082
Fire Alarm Trucks	3,379
Shop Service & Repair Trucks	3,153
Chemical Trucks	190
Grass and Brush Fire Trucks	2,570
Salvage Trucks	666
Pick-Up Trucks	4,605
Chief's Cars:	
Sedans or Coupes	11,828
Station Wagons	4,998

plated, it is interesting to note that these figures come almost completely from departments which do not currently possess this type of apparatus. Most departments which list pumper-ladders in their inventory, indicate that they will switch to either pumpers or aerials when replacing.

The chiefs reported 387 rescue trucks in service. They indicated that 44 need replacement, and that 74 additional units are needed. Of those reported, 83 were purchased with civil defense matching funds.

Special apparatus

Under special apparatus, the departments which returned inventories listed four fireboats, one a 65-foot 2,000-gpm unit and another an 87-foot single-screw craft. Two of the larger departments each reported a water tower, one converted from an 85-foot aerial. Four fuel tanks were listed, three deluge gun units, four DUKWS and two air compressor units. One large department maintains a bulldozer, a fork lift and a snow plow. Other special equipment included a jeep for field fires, another with a 500-gallon trailer and one with a 100-gallon booster tank and a snow plow. Eleven rescue boats with motors and trailers and four 500-gpm trailer pumps were also reported. One department has an iron lung on a four-wheel trailer, and one of the larger departments has two stake body crane trucks. Civil defense equipment such as pumpers and 4-inch hose was also listed.

Only 46 departments, less than 1 per cent of those who returned questionnaires, indicated that they had given any consideration to lease-rental of vehicles. In fact, there seems to be some misunderstanding of the term. One form included a CD 750-gpm pumper as a "leased vehicle." Another department reported "two sedans and four station wagons leased from the city garage."

Eleven departments indicated that they lease department vehicles at present. Among the latter are: Four apparatus, including one 1,000-gallon pumper; 11 cars; three station wagons and one pick-up truck. One midwest city of approximately 49,000 population indicated that it leased all department vehicles. Another department replied that it had used lease-rental in the past. Still another reported it is purchasing two pumpers and an aerial, while a third is obtaining an aerial on a lease-purchase plan.

Some of those who have not given consideration to lease-rental said they believed it too costly.

Replacement policy

In many cities, policy concerning replacement of fire apparatus is "conspicuous by its absence." A surprising number replied that they had no stated policy concerning replacement of apparatus. Some try to follow the recommendations of the National Board of Fire Underwriters and the rating organizations. Some depend on an annual tax levy; others budget a set sum annually and allow it to accumulate towards replacement when this becomes necessary. One department in the Middle Atlantic states purchases a new piece of apparatus every other year. It pays half the purchase price upon delivery and the balance the following year. One chief noted that "department policy is subject to limitations imposed by budgetary considerations at city hall." Many cities follow the recommendations of the fire chief, but as one chief noted, "the rub comes when the department tries to convince the city council of the need for replacement." One chief replied that not only did the department have no stated policy, but he has "to fight a knock-down and drag-out battle to get any every 10 or 15 years."

While 462 departments replied that they employ a total of 1,267 men in servicing and repairing vehicles, most qulaified their replies. Except in departments serving communities of 100,000 and over, the vast majority of departments attempt only servicing and minor repairs; they depend on factory mechanics for major repairs. □□

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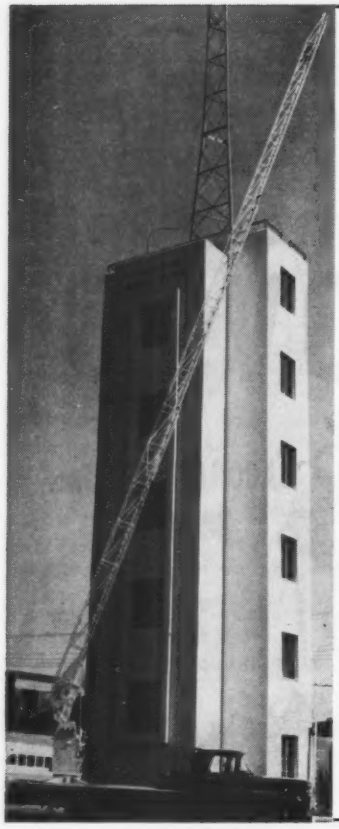

SPONCO ALL STEEL AERIAL LADDER

Orders for the new SPONCO aerial ladders continue to "roll-in", and it is most gratifying to us to note the satisfaction and pride of ownership displayed by the firemen who use these new all steel aerials. It is equally pleasing to see the enthusiasm displayed for the SPONCO line of aerials by the progressive fire truck manufacturers. The purpose of our decision to re-design, re-engineer and modernize our line of aerials was to make available to the fire service the very finest piece of fire fighting apparatus possible to produce for the smaller cities who cannot afford the more expensive aerials.

The design of the new SPONCO aerials makes it possible for us to offer two different ways of raising and lowering—either with the time tried mechanical screw or by the modern hydraulic cylinder. The mechanical screw 12 volt powered aerial raising system has long been one of our standard features on the Memco aerials. Now we have developed a 12 volt electro-hydraulic system for the SPONCO aerials. The hydraulic system elevates the aerial in less than 30 seconds which is much faster than the screw.

AVAILABLE IN 50, 65 AND 75 FOOT LENGTHS REASONABLY PRICED

Your favorite fire truck manufacturer can build a SPONCO aerial into your new truck, or possible incorporate one into a truck which you already have in service. Investigate today—write or telephone for photographs and prices.

The SPONCO aerial is a product of

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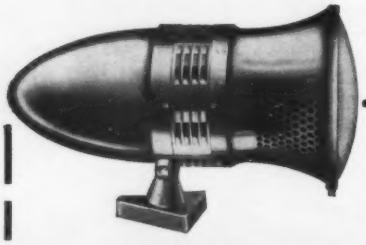

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Siren sounds a penetrating warning, red light automatically flashes authority. Traffic opens instantly, day or night. FREE ROLLING feature.

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MUTUAL AID

Continued from page 717

partments for specialized training in such operations as tank fires, chemical fires, building and other structural fires. A Monroe County Fire Bureau has been established which provides equipment such as films and projection equipment, training manuals, inspection forms and other items to further train the firemen. Training instructors are also available through the county fire bureau for any department so desiring.

Expanded for growing areas

Monroe County has grown in population over the years and new residential areas have been developed in all communities, as well as many new industrial installations. The mutual aid system in the county has been expanded accordingly in order to protect each growing area. The entire fire service has but one goal—the protection of life and property in the most efficient manner possible. The Monroe County Mutual Aid System stands ready to function at all times to assure each fire chief and community that adequate manpower and equipment is available upon call to combat any emergency as well as provide stand-by service so that no areas are vulnerable to other emergencies. The fire service has always represented the American way of life and certainly a good functioning mutual aid system furthers this. □□

Navy Issues Instructions For Use of Purple-K

The U. S. Navy recently issued instructions concerning the use of potassium bicarbonate-type dry chemical extinguishing agent popularly known as "Purple-K-Powder." According to the Navy, the "P-K-P" material is compatible with foam and of greater effectiveness than other similar agents.

An excerpt from a new paragraph, 3.331 NAVAER-00-80R-14, Navy Aircraft Fire Fighting and Rescue Manual, states: "When P-K-P is applied very low to the fire and with very little nozzle velocity, the fire fighter will not have to retreat from the initial "orange-ball-flare" effect which always accompanies the use of the older C-D-C (compatible dry chemical) powders. A cool, light-purple flame is developed when P-K-P dry chemical contacts the fire and flame extinction is immediate. The fuel surface resists reflash longer and advance on the fire is thereby made easier. Foam blankets are not destroyed by P-K-P and it can be used for slender "finger fires" in or around a foam cover applied by the MB Series Aircraft Fire Fighting and Rescue Trucks."

Persons in the News

Son Succeeds Father In Carlsbad, N. M.

Chief Ira J. Stockwell, Carlsbad, N. M., Fire Department, retired December 31 after 39 years of service. He headed the department for 30 years. A member of the International Association of Fire Chiefs and past president of the New Mexico State Firemen's Association, Chief Stockwell lead the department during its entire period of expansion and transition from a completely volunteer to a paid and volunteer force.

Assistant Chief Robert L. Stockwell, son of the retiring chief, succeeded his father. The 26-year-old chief joined the Carlsbad department as a volunteer in 1951 and became a regular member when the paid force was established in 1953. He was promoted to captain in 1958 and named assistant chief in June 1959.

Gonnoud Named LAFD Information Head

Captain Vincent Gonnoud has been appointed head of the Los Angeles City Fire Department Fire Protection, Education and Information Unit, succeeding Captain George Kelly who has been reassigned to Engine 5 in the Westchester area. Captain Gonnoud comes to his assignment from duty in various parts of the city on three truck companies and eight engine companies. He joined the department in December 1948, and was promoted to Captain in September, 1957.

Paul C. Ditzel

Rule Named Chief Of Greenfield

Charles Rule, a former Stillwater, Okla., fire fighter and graduate of Oklahoma University Fire Protection School, was named chief of the newly organized Greenfield, Wis., Fire Department on July 15. Chief Rule has served with the U. S. Navy in fire fighting capacities and

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"INVINCIBLE" NOZZLES

Baltimore can well be proud of its marine fire fighting fleet. For these fine fireboats only the best is good enough.

That's why, when it came to the selection of nozzles for the *D'Allessandro,* the choice was McIntire "INVINCIBLE" nozzles. "INVINCIBLE" nozzles were selected for their proven ruggedness and performance, but above all, for their ability to deliver large amounts of water when and where it is needed.

Whether yours is a land or a sea fleet . . . you can be sure when you specify "McIntire."

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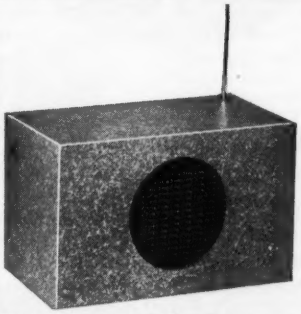

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The Modern Dependable Alarm System for

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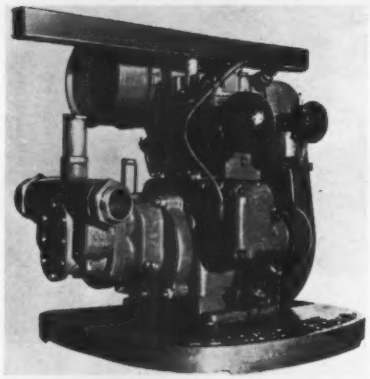
DEPENDABLE PORTO PUMP



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OUTSTANDING PERFORMANCE—with straight stream nozzle, fog nozzle, or foam playpipe equipment.

RUBBER GEAR CONSTRUCTION—Pumps water from Lake, Pond, Ditch, Fire Hydrant, etc.

EASY TO OPERATE, MAINTAIN & SERVICE—Quick starting 4-cycle engine—all pump parts in stock.

LIGHTWEIGHT—and conveniently portable to water source.

LOW INITIAL INVESTMENT—delivers more fire quenching wallop per dollar than any other pump.

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at the time of his appointment was with the Allis-Chalmers Mfg. Co., in Oak Creek, Wis. The new Greenfield department is to be composed of 50 volunteer fire fighters headed by the paid chief and will be activated on September 1.

Charles Bleck

Smith Named Bergen County Fire Marshal

Amos Smith, veteran Port of New York Authority safety inspector, has been named fire marshal of Bergen County, N. J. He is the original appointee to the recently created post and his term will run until January 15, 1961.

A volunteer fireman and resident of Mahwah, he is president of the New Jersey and New York Volunteer Firemen's Association. For some time he has been in charge of the association's training program and has been instrumental in planning the Bergen County fire training school to be erected on an 83-acre plot in Mahwah. He is also Bergen County civil defense fire coordinator.

Chief Wiggins Retires

Chief Max Wiggins, for the past 25 years head of the East Point, Ga., Fire Department, retired April 1. A veteran of 37 years service he was appointed in 1923 and observed the department grow from a single man to its present complement of 57.

Chief Wiggins has accepted the position as secretary-treasurer, Georgia Firemen's Pension Fund, a project in which he has been very active.

NBFU Elects Officers

John A. North, president of The Phoenix of Hartford Insurance Companies, was elected president of the National Board of Fire Underwriters at its recent 94th annual meeting at the Hotel Commodore, New York.

Other officers elected include: Lester S. Harvey, president of the New Hampshire Insurance Group, vice president; Charles P. Jervey, vice president of The Travelers Indemnity Company, secretary; William E. Newcomb, chairman of the board and president of the Great American Group, treasurer. Lewis A. Vincent was reelected general manager.

Embree Named Fire Marshal

Bert Embree was recently appointed fire marshal of Sierra Madre, Calif., by City Administrator Lawrence Bevington, following city council approval. Embree will work under the direction of Fire Chief Charles Brown, and will be assigned duties in fire prevention and education among residences, business firms, and schools.—*Paul C. Ditzel*

Chief O'Hara Retires

Chief Engineer James H. O'Hara, Somerville, Mass., Fire Department, retired May 8 after 40 years of service. He was named chief engineer on December 11, 1952, and was the first chief appointed under civil service regulations. During his tenure he successfully convinced the city to adopt an ordinance requiring that all convalescent and nursing homes converted from frame dwellings be equipped with automatic sprinkler systems.

Griener Heads Belen

Jake L. Greiner has been named fire chief of the Belen, N. M., Fire Department, succeeding the late Roy Buckland. Greiner is a veteran of 15 years service with the department.—*E. W. Fair*

A. L. Rathke Retires

Chief A. L. Rathke, San Antonio, Tex., Fire Department, retired on January 13 upon reaching his 65th year as required by retirement regulations. He is a veteran of more than 43 years service with the department.

Chief Rathke was named to head the department on February 4, 1959. During his tenure he organized a home inspection and education program and as a result, succeeded in obtaining a reduction in fire

insurance premiums from the State Board of Insurance. Prior to becoming chief he headed the division of fire training for 20 years.

New York Deputy Chief Honored by Israel

Deputy Chief Charles E. McKeogh, a veteran of 33 years with the New York Fire Department and at present commander of Division 3, Manhattan, was recently presented a scroll by the State of Israel in recognition of his special service to that country during 1958. The scroll is a copy of a bronze placque which is mounted on the Haifa Fire Station wall to commemorate his services.

Moses Schoenfeld, director, American Friends of the Hebrew University, presents Chief McKeogh with scroll as Chief George David and Fire Commissioner Edward F. Cavanagh, Jr., look on

Chief McKeogh was sent to Israel for a three-month tour of duty and instructed the Haifa Fire Brigade and port officials in fire fighting techniques and ship damage control. A commander in the U. S. Naval Reserve, he was selected for the advisory job after recommendation by the U. S. Chief of Naval Operations as a qualified Navy damage control officer.

Ike Holiber

Chief Batsch Retires

Andrew Batsch, chief of the Ravenna, Ohio, Fire Department for the past 33 years, recently retired. A veteran of 47 years service, he joined the department as a volunteer in December 1913. He was named captain in 1917, assistant chief in 1920 and became chief in September 1927.

Heavyweight Champ Named Honorary Chief

Floyd Patterson, who became the first heavyweight champion in history to regain the title when he knocked out Ingemar Johansson at the Polo Grounds, New York City, on June 20, has been named a fire chief.

Obviously the champion won't be jumping into turnouts at 3 a.m. on a wintry night, nor will he be crawling through a smoke-filled cellar handling a

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Fire Chiefs Everywhere...

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Simple to Apply • Effective • Comfortable

More and more fire and police departments are using the Stryker Emergency Splint because of the simplified method of application. The Stryker Emergency Splint combines shaped aluminum half sections with built in padding and traction to completely immobilize the limb. Moderate, uniform compression controls bleeding and swelling. X-rays can be taken without removing the splint, allowing the fracture to be set immediately. Lightweight.

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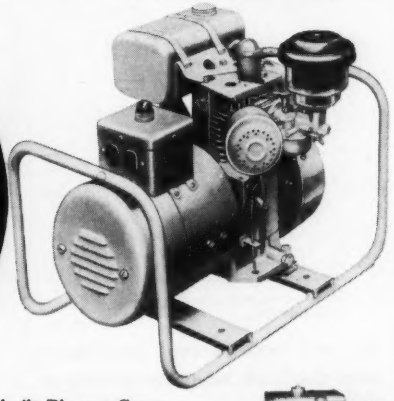

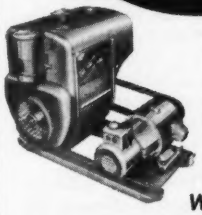

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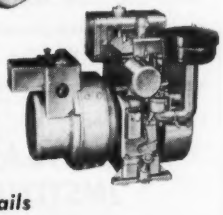

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INVESTIGATE FIRES, ARSON, SUBROGATION

John "Jack" Kennedy

. . . the nationally-known fire investigator and Chief Special Agent of GENERAL INVESTIGATIONS, INC., who has trained many firemen including the Chicago Fire Department Arson Squad, announces his FIRE AND ARSON INVESTIGATION COURSE is now available by . . .

CORRESPONDENCE

Graduates of this course are at present conducting investigations for . . .

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Firemen and others who wish to qualify and take full or part-time employment as insurance company investigators or adjusters will recognize that this course is ideally-suited to them.

Some of the fifty subjects covered . . .

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2½-inch line. Here's how Floyd attained the honor:

The townspeople of Newtown, Conn., where Patterson trained for his title fight, became very friendly with him from the start and were overjoyed when he recaptured the title. A "Floyd Patterson Day" was held on July 8 and all hands turned out for the event.

The champion was driven to the firemen's carnival in a fire pumper and made an honorary fire chief. The title was bestowed by the Hawleyville Fire Company, with Chief Morris Beers making the presentation of a badge to Patterson. Floyd was later honored at a dinner in the Yankee Drover Inn, Newtown.

Tom Magner

Annual Reports

Larchmont, N. Y. — Chief Duncan MacPhail reports the fire department responded to 35 full alarms and 30 still alarms during the fiscal year ending March 31, 1960. Fire losses amounted to $56,310, an increase of 105 per cent over 1958-1959 figures. However, 93 per cent of this loss, $53,500, resulted from one fire, the Chicken Box Restaurant. When grease in the kitchen duct ignited, the owners tried to fight the fire for some time before sending in an alarm. Although 86 fire fighters fought the fire for nearly three hours, the handicap of the delayed alarm could not be overcome.

Ketchikan, Alaska — Chief Ralph M. Bartholomew reports that the city's fire insurance classification improved from Class 5 to Class 4 during 1959, and will result in an estimated $40,000 saving in fire insurance premiums annually. The purchase of an 85-foot aerial ladder truck was credited with contributing to the reduced rate. Chief Bartholomew recommends that a depreciation fund be set up to provide for apparatus replacement, that a drill tower with complete drill equipment be erected, and that a 35-year-old 350-gpm pumper be replaced with a 1,000-gpm standard pumper.

Fort Worth, Tex.—Chief Paul C. Fontaine reports that Forth Worth placed first in the state, third in population bracket and 12th in the nation in the National Fire Protection Association Fire Prevention Contest. The department purchased a 65-foot aerial ladder truck during 1959. While the department answered 350 more alarms than in 1958, losses decreased by $7,500.

New York State Division of Safety—Acting Director of Safety George H. Proper, Jr., reports that nine school fire safety lectures were presented to more than 1,000 fire and school officials. Effective April 1, the Division was disbanded and the Bureau of Fire incorporated in the newly created Office of Local Government. Fire training and mutual aid

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QUALITY
because that is what the JANESVILLE label has always represented.

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because JANESVILLE coats may be trimmed with SCOTCHLITE reflecting tape.

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JANESVILLE TURN-OUT SUITS ARE AVAILABLE WITH THE NEW ALUMINIZED FABRIC THAT REFLECTS 90% OF RADIANT HEAT!

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mobilization will continue under the direction of the Division of Fire Safety.

Chicago, Ill.—Undoubtedly the most elaborate ever received by FIRE ENGINEERING, this annual report is profusely illustrated with many four-color photos. Commissioner Robert J. Quinn reports on the extensive fire prevention activities of the department and the modernization program. Two new firehouses were completed during 1959, and two aerial platform trucks, two 100-foot aerial ladders, one 144-foot aerial ladder and five 50-passenger buses for transporting personnel and for "warm-up" and first-aid stations were placed in service.

Austin, Tex.—Chief Robert H. Dickerson reports fire losses of $595,397, approximately $51,000 more than for 1958. The department responded to 2,437 alarms; 54.3 per cent of all fires were extinguished by booster lines.

Ontario, Canada—Fire Marshal W. J. Scott reports that during its first full year of operation, the Ontario Fire College was kept operating at capacity. More fires were investigated by the Fire Investigation Division in 1959 than during the previous year, with a record number of criminal convictions. □□

Luxury Fire Plug

Pedestrians and drive-in banking patrons of Lubbock, Tex., were recently astounded to find a chrome-plated hydrant gracing the curb in front of the National Bank.

Upon closer examination, the following framed explanation was noted:

"This fire plug is provided for luxury service for our canine friends in keeping with the general remodeling program for our bank. This extra touch has been added by the Lubbock National Bank, and has in no way become an expense of the City of Lubbock."

Judging from the contented expression of the canine "friend," the rest of the 50 states still have to go some distance to equal Texas.

Lew Holland

GARRISON

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provides greater steering control for SEAGRAVE fire fighting apparatus

Now available as factory installed option or in kit form for field installation

Threading speeding fire apparatus through crowded city streets calls for maximum steering control. That's why Seagrave has made Garrison Power Steering available as optional equipment on their fire trucks. Hydraulic power does 80% of the work of steering, giving the operator complete control of the equipment with only slight pressure on the steering wheel. Even the heaviest equipment is easily and quickly maneuvered in and out of close quarters.

Available for other makes and models

Garrison Power Steering is also available for other makes of wheeled, fire fighting apparatus, most makes and models of trucks, wheeled tractors, off-the-road construction equipment and some material handling equipment. Information will be sent upon request.

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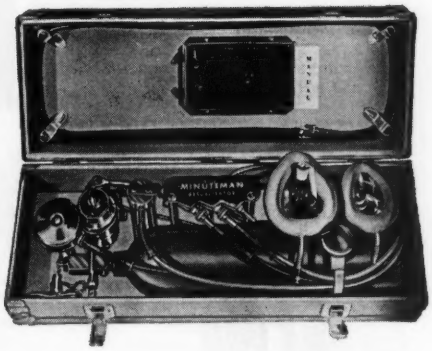
Somebody lives, because somebody else had a

MINUTEMAN RESUSCITATOR



You never know when you'll need a STEPHENSON MINUTEMAN — today, tomorrow, next month. Better assume you'll always need it, even though you may never use it. Regard it as 28 pounds* of prevention, worth tons of regret.

Although it is compact, 24½" x 8¾" x 7¾", the instrument combines the functions of resuscitator, inhalator and aspirator. With an extra Midget attachment it will resuscitate 2 patients and aspirate a third simultaneously. Pressures are adjustable from Adult to Infant, with manual override when needed. Easily regulated to mixtures from 100% oxygen to 50% oxygen, 50% nitrogen from the air.

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□ Please send Minuteman Folder L-29
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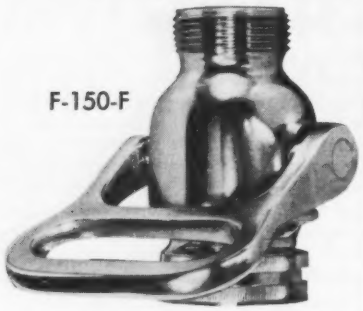

Full Floating BALL SHUTOFFS

"F-150-F" has full 1½" waterway, unrestricted through ball and discharge . . . minimum pressure and flow losses.

Precision-machined ball gives pressure-tight fit while permitting free movement . . . shuts off high pressure stream with minimum effort. Body is durable, polished chrome plated brass.

Model F-150-F features neoprene valve seat for maximum resistance to abrasion—provides a tight, high-pressure fit. Neoprene seat permits easy replacement in the field without need for special skills or equipment. Requires no critical fitting or lapping. Can be supplied for control of suction as well as pressure lines.

Camcone smooth bore tips available for use with Model F-150-F.

OTHER CAMCONE PRODUCTS —long range fog nozzles, playpipes, valves, adaptors and combinations.

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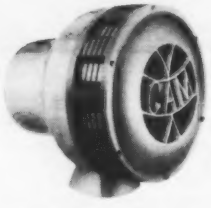

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CAM SIRENS

CAM Sirens available in freewheeling and non-freewheeling types for concealed or exterior mounting.

Features reliability—highest quality construction. Model 104-B freewheeling type shown above has powerful 104 db output. "104-B" has push-button-actuated magnetic brake for quick silencing, high torque motor with balanced rotor—polished chrome plated protective cover. (Exterior model)

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Bridgeway at Nevada Street, Sausalito, Calif.

Photo by E. J. Carroll

New England Fire Chiefs Association Elects Officers

The New England Association of Fire Chiefs elected the following officers at its 38th annual conference. Seated in front row (left to right) First Vice President A. T. Wright, White River Junction, Vt.; President F. J. Dagon, East Hartford, Conn.; Second Vice President R. Frates, Bath, Me.; Secretary-Treasurer A. W. Kimball, Hingham, Mass. Standing, middle row (left to right) Directors G. A. Bulger, Rumford, Me.; F. R. Crompton, Portsmouth, N. H.; B. A. Curran, Scituate, Mass.; A. H. Koltonski, Rutland, Vt., T. J. Collins, New Haven, Conn. Rear Row (left to right) Technical Consultant H. G. Thomas, Hartford, Conn.; Rev. M. F. Collins, chaplain; Sergeant-at-Arms W. J. Dooling, B. F. Goodrich Co., Watertown, Mass.; Immediate Past President and Director G. L. Foss, Wolfboro, N. H. Director T. E. Duckworth, Warwick, R. I., was not present at time of photograph. The four-day conference at Wentworth - By - The - Sea, Portsmouth, N. H., attracted more than 700 delegates and guests.

Grote Heads New England Division, I.A.F.C.

Photo by E. J. Carroll

Chief James L. Grote, Chester, Conn., was elected president of the New England Division, International Association of Fire Chiefs, during the annual business meeting of the division held at Wentworth-by-the-Sea, N. H., on June 20. Officers shown in the photograph are: Seated (left to right): Chief J. E. Callahan, Winchester, Mass., second vice president; President Grote; Chief J. E. Cally, Beverly, Mass., first vice president; Chief W. R. Messer, Keene, N. H., secretary-treasurer. Standing (left to right): Chiefs H. F. Travers, Worcester, Mass., vice president, and J. E. Keefe, Bellows Falls, Vt., vice president; L. C. Walden, former superintendent, Worcester Protective Department, sergeant-at-arms; Chiefs C. P. Johnson, Portland, Me., vice president; G. F. Salisbury, Central Falls, R. I., vice president; S. M. Potter, Greenwich, Conn., vice president. Not shown in photograph are New Hampshire vice president, Chief G. N. Guevin, Manchester; and chaplains, the Rev. M. F. Collins and the Rev. J. Fitzsimmons.

Texas Firemen and Fire Marshals Elect Boring

C. H. Boring, Jr., of Rosenberg was elected president of the State Firemen's and Fire Marshals' Association of Texas at the annual convention held recently in Galveston. Serving with him will be: First vice president, Vernon Rucker, Killeen; second vice president, W. E. Zorn, Del Rio; third vice president, Palmer West, Eldorado; fourth vice president, Norvall Terry, Weatherford; secretary-treasurer, David Clabaugh, Carthage; assistant secretary-treasurer, E. W. Pietsch, Seguin; chaplain, the Rev. Haskin Little, Houston. The 1961 convention will be held in Austin June 13-15.

In the state pumper races held during the conference, Brownwood took first prize and Rosenberg and Killeen tied for second. Alvin was awarded fourth place prize money.

FIRE COLLEGES

Arizona State Fire School—Oct. 20-22, Phoenix, Ariz. For information write Chief Jake Siken, Supervisor of Training, Phoenix Fire Department.

Carbon County Fire School—Sept. 10-11, Lehighton, Pa. For information, write Corwin Solt, Associate Fire Marshal, 4th Street, Lehighton, Pa.

Florida State Fire College—Sept. 5-9, **Units 101,** Tools, Forcible Entry, Breathing Apparatus, Extinguishers; **106,** Fire Inspection; **201,** Instructor Training, Sept. 12-16, **Units 102,** Hose and Ladders; **202,** Company Officer Training; **206,** Fire Prevention and Protection. Sept. 19-23, **Units 103,** Rescue, Ventilation, Salvage and Overhaul; **105,** Fire Apparatus and Pumps; **204,** Fire Fighting Tactics, Sept. 26-30, **Units 104,** Fire Streams; **107,** Arson Detection; **208,** Fire Department Administration. For information contact Florida State Fire College, P. O. Box 785, Ocala, Fla.

Indiana Fire Training Program—Sept. 14-17, Annual Indiana State Fire School; Oct. 25-27, Fire Inspectors Course. All courses will be held at Purdue University, Lafayette. For information, write Professor Shelby Gallien, Director, Public Safety Institute, Purdue University, Lafayette, Ind.

Maryland Fire Service Training Program—Sept. 6-9, **Short Course for Firemen.** All courses to be held at Fire Service Extension Building, University of Maryland. For information, write, Robert C. Byrus, Director, P. O. Box 85, College Park, Md.

Monroe County Fire School—Sept. 17-18, Coolbaugh Township, Tobyhanna, Pa. For information contact James H. Oakey, Director **Box 67, Tobyhanna, Pa.**

Morris County Fire School—Sept. 6, Budd Lake Fire Headquarters. For information, write Robert H. Wright. Publicity Chairman, Long Hill Lane, Chatham, N. J.

New Hampshire Fire School — Sept. 17-18, Meadowood Fire Department Training Center, Fitzwilliam, N. H. For information contact, Chief Donald Holbrook, Meadowood Public Relations, Suite 705-10, 84 State Street, Boston 9, Mass.

Ohio State Fire School—Sept. 12-16, the Ohio State University, Columbus, Ohio. For information write The Trade and Industrial Education Services, 118 Townsend Hall, The Ohio State University, Columbus 10.

Ontario Fire College—Aug. 15-26, **Fire Department Instructors' Course, Part II,** Aug. 9-Sept. 2, **Volunteer Fire Officers' Course, Part I;** Sept. 12-16, **Eastern Ontario District Fire Course;** Sept. 19- 23, **Pump Course;** Sept. 26-Oct. 7, **Company Officers' Course;** Oct. 17-21, **Basic Fire Inspection Practices Course;** Oct. 24-28, **Mutual Fire Aid Forum—County Fire Coordinators.** All courses will be held at the Ontario Fire College at Gravenhurst, Ont. For information, write W. J. Scott, Q.C., Fire Marshal, Province of Ontario, 210 Huron Street, Toronto 5.

Pennsylvania State Firemen's Training School—Aug. 20, **Instructors Conferences;** Aug. 22-26, **Ladders, Rescue, Salvage;** Aug. 29-Sept. 2, **Advanced Fire Fighting;** Sept. 12-16, **Fire Department Pump School;** Sept. 26-30, **Basic Fire Fighting;** Oct. 3-7, **Advanced Fire Fighting;** Oct. 17-21, **Basic Fire Fighting;** Oct. 31-Nov. 4, **Advanced Fire Fighting;** Nov. 14-18, **Fire Department Pump School.** All courses to be held at the State Training School, Lewistown, Pa. For information contact Art Espey, Director, Box 631, Lewistown.

South Boston, Va., Fire School—Aug. 22-26. For information, write R. Lawrence Oliver, Director of School, State Department of Education, P. O. Box 654, Harrisonburg, Va.

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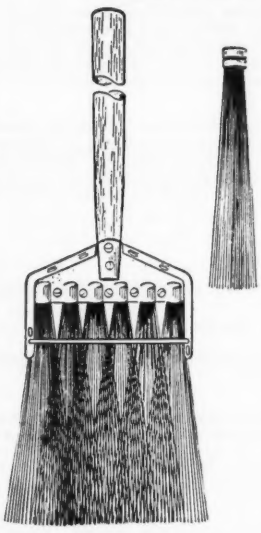

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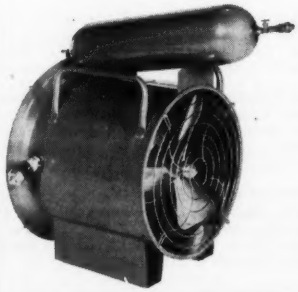

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Southern Wisconsin and Northern Illinois Fire School — Sept. 18, Green County Fair Grounds, Monroe, Wis. For further information, Herman Pfund, Secretary, Southern Wisconsin and Northern Illinois Firemen's Association, New Glarus, Wis.

Suffolk County Field Conference—September 25, Civil Defense and Firematic Training Center, Yaphank, L. I., N. Y. For information, contact Chief Harold Hochheiser, Secretary, Fire Chiefs' Council of Suffolk County, Riverhead, L. I.

Tri-State Fire School—Aug. 22-26, Fire School; Nov. 15-18, Instructors School for Company Officers, Huntington, West Va. For information, write R. M. Myers, Secretary-Treasurer, Tri-State Fire School Association, 816 Ninth Street, Huntington. □□

Coming Events

Aug. 19-21—Connecticut State Firemen's Association. Annual convention and parade, New London, Conn. For information write the New London Firemen's Association, Convention Committee, Inc., P. O. Box 811, New London, Conn.

Aug. 25-27—Westchester County Volunteer Firemen's Association. Annual meeting, Ossining, N. Y. For information contact William Johnson, Co-Chairman, Box 334, Ossining, N. Y.

Aug. 28-30—New York State Permanent Firemen's Association. Annual meeting, Tonawanda, N. Y. Secretary-Treasurer, Robert E. Mills, 420 Plymouth Drive, Syracuse 6, N. Y.

Aug. 28-Sept. 3—International Association of Fire Fighters. Annual meeting, Buffalo, N. Y. Secretary-Treasurer, John C. Kabachus, AFL-CIO Building, 815 Sixteenth Street, N. W., Washington 6, D. C.

Sept. 12-15—International Association of Fire Chiefs. Annual meeting, Hotel Manger Seneca, Rochester, N. Y. Secretary-Manager, B. Richter Townsend, 232 Madison Avenue, New York 16, N. Y.

September 15—Delaware Fire Chiefs Association. Semiannual meeting, Bridgeville, Dela. Secretary, Howell H. Barnes, Smyrna, Dela.

Sept. 16-17—Delaware Volunteer Firemen's Association. Annual meeting, Bridgeville, Dela. Secretary, E. Reynolds Bradley, Smyrna, Dela.

Sept. 19-22 — Canadian Association of Fire Chiefs. Annual meeting, Calgary, Alberta. Secretary-Treasurer, Chief Allan H. Clark, Fire Headquarters, Lakefield, Ont.

Sept. 19-22—International Municipal Signal Association. Annual meeting, New York, N. Y. Secretary, Irvin Shulsinger, 130 West 42nd Street, New York 36, N. Y.

Sept. 20-21—Iowa Firemen's Association. Annual meeting, Guthrie Center, Ia. Secretary, A. B. Arnold, c/o Fire Department, Mason City, Iowa.

Sept. 25-28—Pacific Coast Inter-Mountain Association of Fire Chiefs. Annual meeting, Las Vegas, Nev. Secretary-Treasurer, S. E. Edmundson, 1248 Marengo St., Pasadena, Calif.

Sept. 27-30—Michigan Fire Inspector's Conference. Annual meeting, Michigan State University Kellogg Center, East Lansing, Mich. Secretary, Arthur Patriarche, 550 Gunson Street, East Lansing, Mich.

Oct. 17-21—National Safety Congress. Annual meeting, Chicago, Ill. Further information may be obtained from R. L. Forney, secretary, National Safety Council, 425 North Michigan Avenue, Chicago 11, Ill.

Oct. 20-23—Nebraska State Firemen's Associa-

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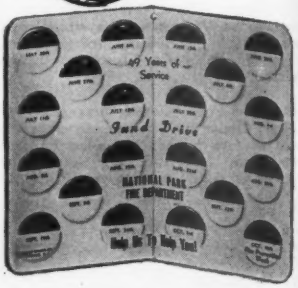

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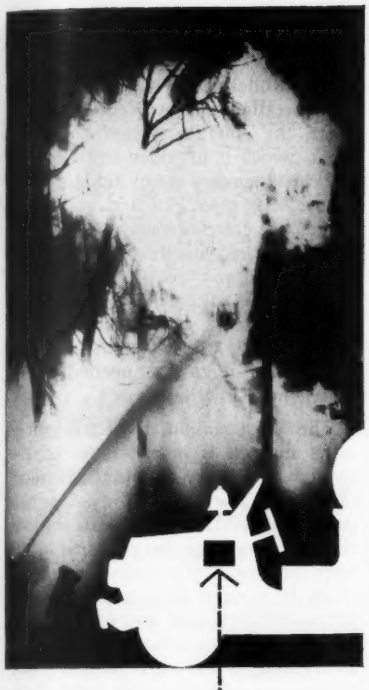

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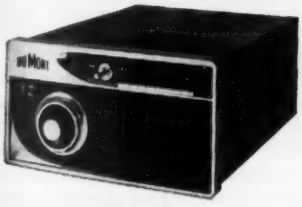

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tion. Annual meeting, Chadron, Neb. For information, write Chadron Fire Department.

Oct. 31-Nov. 2—Illinois Firemen's Association. Annual meeting, Springfield, Ill. Secretary, R. W. Alsip, Box 8, Champaign, Ill.

Nov. 3-5—International Rescue and First Aid Association. Annual meeting, Benjamin Franklin Hotel, Philadelphia, Pa. For further information, contact the Executive Office, 314 King Street, Alexandria, Va. □□

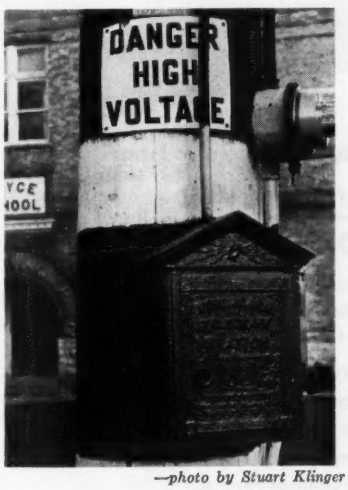
Ansonia, Conn., Station Heavily Damaged in Fire

Fire of undetermined origin destroyed the interior of a three-story brick building used by one of the five volunteer fire companies at Ansonia, Conn., on June 24. Damage to the Howard Avenue home of the Fountain Hose Company was estimated at between $15,000 and $20,000.

The fire broke out in the basement and swept through the structure, but not before Fire Marshal Herbert A. Smith and Captain James W. Morgan each drove a pumper out into the street. Michael Dalton, who lives across the street from the fire station, sounded the alarm. The four other volunteer companies responded. There was no one in the building when the fire broke out. Most of the damage was confined to furnishings, the kitchen, and about 2,000 feet of hose.

Tom Magner

Danger In Signs



—photo by Stuart Klinger

The children of the school shown in the background of this photo must contemplate the warning sign mounted over this fire alarm box at frequent intervals. Whether anyone has taken time to explain the apparent incongruity is another matter.

While many adults may realize the sign is a warning to those intending to climb the pole it may cause confusion to others not well versed in such safety measures. It could also create a hazard in that a timid person might hesitate to touch the box in a time of emergency.

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KODAK PARK FIRE DEPARTMENT

Continued from page 708

where it is stored in two reservoirs, each with a capacity of 5 mg. The water is used primarily in connection with the production of photographic film, paper and chemicals. However, it may also be employed for fire fighting purposes.

After leaving the pumping stations, fire mains, some as large as 16 inches in diameter, are completely separate from industrial mains except that there are a number of cross connections with check valves which permit water from the industrial mains to augment the fire supplies. In addition, emergency cross connections from the city mains as well as those of the Monroe County Water Authority are available. One of these connections, the 12-inch branch from a 48-inch main supply from the city's Lake Ontario water station is of unusually high capacity.

Kodak Park's East fire station is headquarters and contains a 750-gpm pumper which is equipped with 750 pounds of carbon dioxide, especially intended for use on electrical fires. Reserve pumper in Kodak East is a 500-gpm unit.

The Kodak East station also contains a rather unique piece of equipment, the emergency command post truck, which is intended to serve as a field headquarters in any serious emergency. It is equipped with radio and telephone communications, maps of the plant, instruments, self-contained breathing apparatus, etc. The truck also contains a small conference table and data sheets about all the buildings, processes, underground piping, etc., which might be needed in an emergency situation.

The West station, located about 2 miles distant, is in a section of the plant where there are more chemical operations. For this reason its principal pumper, a 750-gpm pumper, carries 700 pounds of dry chemical in the form of two 350-pound extinguisher units. In reserve there is a large supply of foam powder and foam-mixing equipment. Reserve unit at the station is a 750-gpm standard pumper. Both stations are equipped with watch desk, shower and locker facilities and a lunch room.

One of the principal duties of the Kodak Park department is the administration of the open-flame permit procedure. More than 60 open-flame permits are issued daily, each of which has to be investigated and an agreement reached on the safe way to do the job. Maintenance supervisors, the operating department and the fire department all have to agree by signing the permit.

The department works on a four-shift basis, averaging 42 hours per week with officers' shifts on a different basis in order to secure full rotation. The normal complement consists of a captain (at the East station), a lieutenant (West station) and seven firemen. □□

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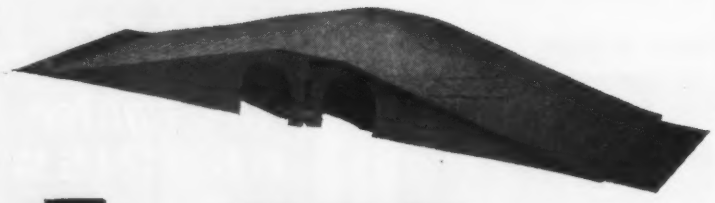

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Nassau Breaks Ground For Training Center

County Executive A. Holly Patterson, Nassau County, N. Y., broke ground on July 20 in a ceremony to initiate construction of the new county firemen's training center at Winding Road, Old Bethpage, L. I. The $350,000 plant will be used to teach fire fighting techniques to the county's 9,706 volunteer firemen, comprising 220 companies in 70 departments, under the Nassau County Vocational Education and Extension Board. Chief James C. Rogers heads the full-time instruction staff. Included in the plans are an instructional meeting building, a fire fighting building, an administrative office building and a storage building.

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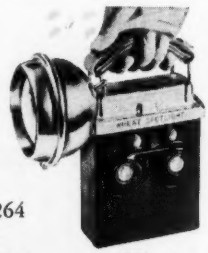

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Oregon Again Holds Joint Conference

Echoes of the Roseburg, Ore., disaster were heard at the joint conference of the 500 members of the Oregon Fire Chiefs Association, the Rural Fire Districts Association and the Oregon Volunteer Firemen's Association held June 19-22 at Seaside, Ore.

The fire fighters by resolution, requested changes in the state conflagration act to speed mechanics of the law and to effectuate a more rigid state explosive act. The proposed amendment would enable the governor to call in any fire force without formally declaring martial law. The state law was by-passed in the Roseburg disaster and it is claimed a number of responding fire departments were without legal protection in answering the appeal for help.

New officers elected by the three groups for the period 1960-1961 were as follows:

Oregon Rural Fire Protection Districts Association: President, Merle B. Gwynn, Delake RFPD No. 2, Wacoma Beach; first vice president, Glenn E. Leininger, Parkrose RFPD No. 2; second vice president, Fred O. Johnson, Canby RFPD; secretary-treasurer, Mrs. Carl R. Pfeiffer, Eugene RFPD No. 1.

Oregon Volunteer Firemen's Association: President, Henry Lowry, Willamkenzie RFPD, Eugene; first vice president, James Hall, Coos Bay; second vice president, Richard McKee, Four Corners RFPD, Salem; Secretary, Robert Waterfield, Roseburg RFPD No. 2; treasurer, Art Waelk, Four Corners, RFPD, Salem.

Oregon Fire Chiefs Association: President, Chief W. C. Ted Miller, Four Corners; first vice president, Chief Vernon Carlon, Bend; second vice president, Chief Gordon Barker, Medford; secretary, Captain Don Reinke, Salem; treasurer, Chief Ivan Pierson, McMinnville.

Roi B. Woolley

Rome, Manila and Tokyo Chiefs To Attend Meeting

The International Association of Fire Chiefs has reported that invitations to its 87th annual conference in Rochester have been accepted by a number of representatives from fire services abroad. Among them are Chiefs Osvaldo Piermarini, of Italy, Eulogio Samio, of Manila and Hikotake Eto of Tokyo, Japan.

Chief Samio, who will arrive in the United States in late August from Europe, heads the fire service in the Philippines. He was in Japan last month to attend the annual meeting of the fire service there.

Chief Piermarini, new commandant of the Italian Central Fire School, is one of the best-known fire officers in Europe. He was formerly chief of the Rome Fire Corps, which is the largest fire department in Italy.

Chief Eto is president of the Fire Chief's Association of Japan and chief officer of the Tokyo Metropolitan Fire Board.

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SEE BACK COVER

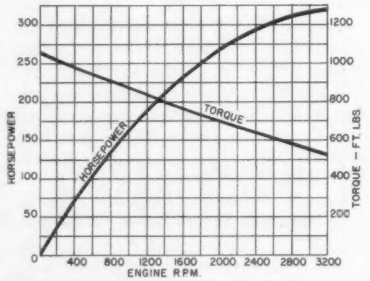
GAS TURBINE ENGINES

Continued from page 725

shaft for clutch and road transmission drive.

Figs. 1 and 2 show the turbine elements in their operating position with the air flow and hot gas passage indicated by the arrows. Fig. 2 is a photograph of a cutaway engine showing the actual parts.

As air enters at the front of the turbine engine it is compressed by the entry turbine. Fuel is sprayed into the burner, mixing with the air. The mixture is ignited by a glow plug. When the mixture is ignited it expands to increase the gas pressure which acts to drive the gas producer turbine mounted on the same shaft, rotating with the entry turbine. The gas flows to the power turbine causing it to rotate and transmit power to the reduction gears and output shaft. There is no mechanical coupling between the turbine rotors of the gas producer and power output sections; therefore the rotational speeds of the two sections may vary independently as required by specific operating conditions.



American LaFrance Triple Combination Pumper
Boeing 502 Gas Turbine Powered

Fig. 5. Horsepower and torque performance measured at output shaft over operating range from 0 to 3,200 rpm

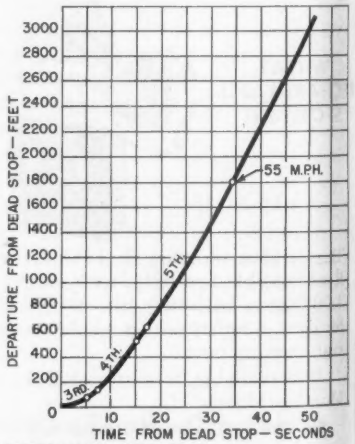
The output shaft speeds from the reduction gears have an operating range almost identical with piston type engines. The top speed of the output shaft is approximately 3,200 rpm. This can vary according to the selected ratio of the reduction gearing.

Fig. 5 shows the horsepower and torque over the full range of output shaft speeds. A characteristic of the gas turbine engine is that a very high torque is available at lower speeds, the maximum at stall. The torque does not drop off at low speeds from an intermediate speed as characteristic of the piston-type engine, thus the turbine engine provides greatly improved performance at low speed.

The illustrations of the Boeing 502 turbine engine are in principle equally applicable to the Turmo Model 602 turbine engine as manufactured by the Engine Division of Blackburn and General Aircraft Limited of London, England. Representation for this engine in Canada is at Ottawa, Ont. The engine is rated at 325 shaft horsepower and the weight is 271 pounds. Continental Aviation and Engineering Corp. at Detroit, Mich., also have models of comparable and larger power output.

Two of the problems of gas turbine engines for automotive application have been well resolved in the Allison turbine engine Model GMT 305. The engine is rated at 225 horsepower and is shown in Fig. 3. A sectional view, Fig. 4 shows the operating components. This is a very compact engine.

The design follows the general air and hot gas flow as shown in Fig. 1, but with an important difference. The hot gas after leaving the power turbine is redirected to flow to a regenerator for recovery of exhaust heat. A drum-like regenerator rotates about each combustion chamber serving to preheat the compressor discharge air entering the combustion chamber. This regeneration of the exhaust from the power turbine lowers the final exhaust temperature, reduces the noise level and reduces fuel consumption.



PERFORMANCE—ZERO GRADE
American LaFrance Triple Combination Pumper
Boeing 502 Gas Turbine Powered
30,000 Lbs. G.V.W.

Fig. 6. Distance travelled on level road during acceleration from standing start with time in seconds for any road speed to maximum

One of the Allison "Whirlfire" 225 hp turbine engines was installed in a truck, replacing a 225 hp V-8 piston engine. The truck payload was in-

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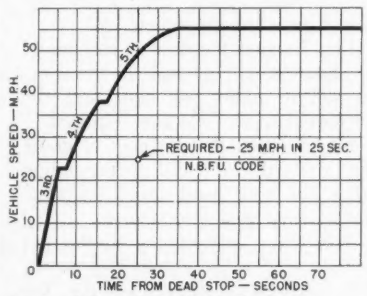
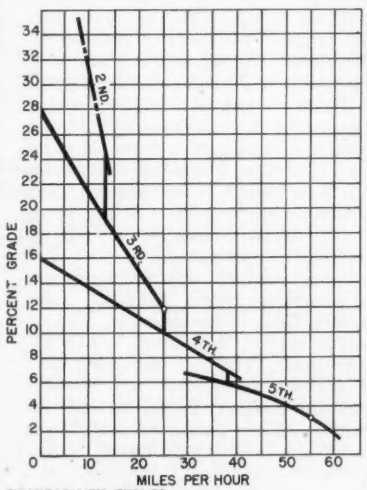
creased 10,000 pounds, and even with the increased load, the turbine engine provided better acceleration and grade climbing ability than was obtained with the piston engine and lesser load. This truck in service at the International Nickel Mines at Sudbury, Ont., is establishing an enviable record for performance and low maintenance.



American LaFrance Triple Combination Pumper
Boeing 502 Gas Turbine Powered, 30,000 Lbs. G.V.W.

Fig. 7. Chart of time in seconds to accelerate to a given road speed (miles per hour) with required progressive road transmission gear shifts

Performance obtainable with the Boeing Model 502 gas turbine engine for a 30,000-pound vehicle (gross weight) is shown on the several charts. A pumper will usually have a gross weight of 22,000 pounds to 26,000 pounds, depending on size of water tank and amount of hose carried. Therefore the performance will be



GRADEABILITY CURVES
American LaFrance Triple Combination Pumper
Boeing 502 Gas Turbine Engine, Spicer 6352 Transmission, Timken Qt.-140 Rear Axle, 10.00-20 Tires, 30,000 Lbs. G.V.W.

Fig. 8. Chart of grade climbing ability of 30,000-pound-gross-weight vehicle at various road speeds (miles per hour) in the different road transmission gear shift positions

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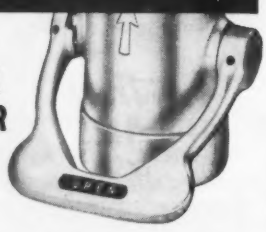

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even better than indicated on the charts. A 30,000-pound gross weight is more nearly the weight of a four-wheel aerial ladder truck. A tractor-drawn aerial ladder truck will have a gross weight of 30,000 pounds to 34,000 pounds.

Fig. 6 shows the time in seconds and the distance in feet traveled to accelerate on level surface to any required road speed with a 30,000-pound gross weight vehicle.

Fig. 7 shows the time in seconds to accelerate to any given road speed expressed in miles per hour and the transmission gear selection required.

Fig. 8 shows the per cent of grade the truck will climb and corresponding miles per hour road speed for each transmission gear selection.

The many advantages of the gas turbine engine for automotive power will justify its acceptance and use. We predict that in a very short period this type of engine will be available in many types of vehicles. □□

Data on GMT-305 performance courtesy of International Nickel Company as published in "INCO" for May 1960.

Connecticut Teaches Fire Administration

Fire officials from towns in central Connecticut recently completed a course in municipal fire administration, the first of a series to be offered in various areas of the state. Instructor for the course which met at Wethersfield was John T. O'Loughlin, fire chief of West Hartford.

The course consisted of 15 weekly meetings and was devoted exclusively to problems of organization and administration in fire departments of growing municipalities. The fire course is one of 10 separate courses offered by the Institute of Public Service of The University of Connecticut in cooperation with 11 associations of municipal officers, including the Connecticut Fire Chiefs Association. It will be offered in September in southeastern Connecticut and will be followed up by similar courses in western and southwestern Connecticut.

Chiefs receiving certificates for successful completion were: Alden G. Avery, Somers; Gustave Bockman, Jr., Newington; Irving H. Christensen, Wilson Fire Department, Town of Windsor; Albert O. Bonesio, Avon; John Daly, Hamilton Standard Division, United Aircraft; Edward F. Haber, Berlin; Fred H. Megin, Sr., Wolcott; Woodrow Pitkat, Stafford Springs; John Pratt, Windsor; Also, Deputy Chiefs Clinton Hughes, and Charles E. Kellogg, Wethersfield; Deputy Chief Steve Krilyno, Wilson Fire Department; Deputy Chief Frank E. Regier and Assistant Chief Roger Rousseau, Blue Hills Fire Department, Town of Bloomfield; Assistant Chief Henry Rougeot, Torrington; and Captain Robert Metcalf, West Hartford.

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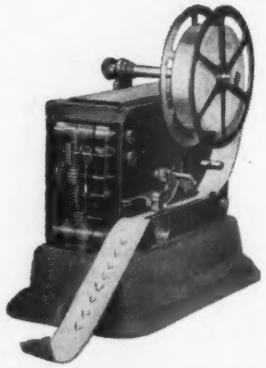

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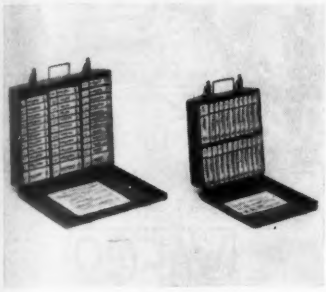

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APPARATUS MAINTENANCE

Continued from page 710

ures on recoil, or nozzle reaction, at various nozzle pressures. For the majority of the tests, two fire bureau pumpers were used; two additional pumpers were added for the full-scale stream experiments. It was also possible to gage the comparative range of streams and their other characteristics by use of photographs, etc.

In 1957 a new hydraulically controlled portable ladder pipe, designed and perfected by the division, was demonstrated at the annual Fire Department Instructors Conference in Memphis, Tenn. This portable ladder pipe is operated by remote control from the control stand on the turntable of a truck. The direction of the stream can be raised or lowered and the fog pattern can be altered from full fog through all positions to straight stream.

Recently the Subcommittees on Heavy Stream Devices and Fog Nozzles of the Committee on Fire Department Equipment, NFPA, jointly tested the flow characteristics of a large number of high-volume fog nozzles. Engineers from the Taylor Instrument Company supervised function of these tests to insure proper recording of the data.

The operatons of the apparatus and engineering division are designed to provide the fire bureau with the most modern and effective fire fighting apparatus and tools available, as well as proper maintenance of all apparatus. In addition, one of the most essential functions contributing to effective fire fighting—emergency repair work and service—is maintained 24 hours per day as well as on the fire scene. □□

Eastern Association Elects New Slate

The Eastern Association of Fire Chiefs, division of the International Association of Fire Chiefs, held its 33rd Annual Conference at the Hotel Flanders, Ocean City, N. J., June 2-4. Host Chief Samuel R. Smith provided an excellent technical and entertainment program for the 288 delegates and guests. One feature was the hospitality room, sponsored by the Paid Fire Chiefs Association of New Jersey, with Captain Walter Bauer, Ridgefield Park Fire Department, and Gustave Bestol, Bell Club of New York, as hosts.

Officers elected are: Deputy Chief F. Lee Cockey, Baltimore County, Md., president; Chief A. Russell Aulenbach, Lebanon, Pa., first vice president; Chief George J. Rebhan, East Orange, N. J., second vice president; Chief Edwin J. Clark, Wayne, Pa., secretary, and Chief Andrew Hutch, Nutley, N. J., treasurer.

The conference honored two long-

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PORTABLE ELECTRIC HAND LAMPS

Model 700-A 2000-foot beam
Most powerful, heavy-duty hand lamp of its size. Adjustable 6-inch head. Operates on four standard No. 6 dry cells.

Model 211 1500-foot beam
Popular price, light weight, easy to carry. Adjustable 5-inch head. Holds two standard 6-volt lantern batteries. Operates on one; other is a spare.

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This action photo from the Lake Geneva Regional News, Wisconsin, shows the Fol-Da-Tank at work. Water from the tanker is being dumped into the Fol-Da-Tank so that it can return to the nearest water supply for another load thereby assuring a constant supply of water from which to work.

Where the nearest water supply is often miles from the scene of the fire, Fol-Da-Tank acts as a central reservoir from which pumper truck or portable pumps can draft. Readily carried, the Fol-Da-Tank can be set up for use in sixty seconds.

Available in 600 and 1000 gal. sizes. Contact your local equipment supplier or the manufacturer.

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time officers: Chief Frank Deen, Lancaster, Pa., and Chief William J. Lutz, Wilmington, Del., by naming them directors emeritus. Chief Deen has served as director for 28 years and Chief Lutz for 30 years.

President Cockey named Chief Charles R. Dorman, Jamestown, N. Y., as director, International Association of Fire Chiefs, representing the Eastern Association.

Montana Firemen Elect

During the 68th annual convention in Dillon, June 16-18, the Montana State Firemen's Association elected Walter Albertson, Dillon, president; Hugo J. Golfi, Red Lodge, vice president; and John P. Flies, Helena, re-elected secretary-treasurer. Kalispell will host the 1961 convention.

Mills Heads Utah Firemen

Chief Chester Mills, Price City, was elected president of the Utah State Firemen's Association during the association's recent annual convention in Cedar City. He succeeds J. K. Piercey, Salt Lake City public safety commissioner and former fire chief.

Albert R. Barrus, Grantsville, became first vice president; Bill Ruff, Springville, second vice president; John Creedon, Bingham, was re-elected secretary; and A. W. Rhone, Tooele, treasurer. St. George will host the 1961 convention.

Montana Volunteers Elect Officers

The Montana Volunteer Firemen's Association, meeting in Dillon, June 12-14, elected John Horn of Libby, president, succeeding Ben Dawes of Sidney; Harry Shaffer, Butte, vice president; and James V. Keyes, Butte, secretary-treasurer. District vice presidents include James Gilbert, Deer Lodge; John Kamla, Malta; Isaac Stimpson, Absarokee; and Lloyd Wick, Sidney.

South Dakota Re-Elects

During the 1960 annual convention in Chamberlain of the South Dakota Firemen's Association, all officers were re-elected and include Vic Englebert, Hot Springs, president; Darrell Walz, Parkston, vice president; Francis Pyncheon, Pierre, secretary, and George Rasmussen, Aurora, treasurer. Sturgis was selected as the 1961 convention and tournament site.

Williams Heads Colorado State Firemen

Mauritz J. Williams of the Fort Morgan Fire Department was installed as president of the Colorado State Firemen's Association for the coming year during the groups 43rd annual convention June 15-18 at Colorado Springs. He was elevated from first vice president.

E. W. Fair

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AUTOMATIC PROTECTION

The installation of FIRETOX will bring SAFE, AUTOMATIC PROTECTION to your community and to your men.

For: Boiler rooms, Utility rooms, Paint storage, Compressors and particular hazards.

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Emergency POWER in Seconds!

Special live wire reeling device provides extra fast action for speedy pay-out and pick-up of long lengths of electrical cable for floodlighting of fires and electrical power for rescue units. Ideal for FIRE TRUCKS and RESCUE UNITS.

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Split second action for fast availability of electrical cable in emergencies.
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Approved and Used By Fire Departments Throughout the Nation
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RESEARCH

Continued from page 719

conducted of these nozzles where employed on ladder pipes. In this manner the nozzle reaction at the various pressures and flows can be evaluated and promulgated to the fire service.

Deputy Chief Vogt, chairman of the subcommittee, supervised all the tests in the entire series. Others assisting included: John Barman, chief engineer, Missouri Inspection Bureau, in charge of recording the discharge data and who later compiled the report figures and measured the angle of discharge on the photographs; Boyd A. Hartley, NBFU, in charge of nozzle settings and pattern angles; John Jablonsky, NBFU, nozzle settings; Fireman E. J. Tschiderer, Rochester, nozzle settings; Warren Y. Kimball, NFPA, report secretary and operations photography; Deputy Chief C. J. McMillan, nozzle pressure recording; Captain E. R. Starr, pump operator; Captain A. F. Reifstack, pump operator; Raymond J. Kubec, Akron Brass of Canada, pitot readings; Raymond E. Owen, Taylor Instrument Co., in charge of instrumentation; James Chisholm, Taylor Instrument Co., instrumentation; Hubert A. Walker, American LaFrance, observer representing the Fire Apparatus Manufacturers Association; and the author, discharge pattern photography. □□

References: John E. Barman, "Is the Water Really There?", illustrated lecture, Proceedings, Fire Department Instructors Conference, Memphis, Tenn., March 1960; "Tests of Large-Capacity Spray Nozzles," NFPA report, June 1960.

SUPPLY AND HOSE DEPOT

Continued from page 713

the cylinders are hydrostatically tested every five years.

Oxygen tanks and portable-pack cutting torch tanks used by the bureau are also refilled at the hose depot. Eight 244-cubic-foot oxygen cylinders are cascaded to accomplish this.

Each fire company carries one carbon dioxide and one dry powder extinguisher and two 175-pound dry ice converters are installed for the recharging of these extinguishers. All extinguisher cylinders are regularly inspected and tested and all valves, horns, hose and brackets are checked and repaired or replaced as required.

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No. B43-Ventilated Braid	$5.95	No. B43W-Ventilated Band	$5.95
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necessary. These men operate drills, saws, a lathe and a heavy-duty sewing machine for repairing coats, and tarpaulins, as well as making covers for masks and other appliances such as generators, chain saws, portable lights, etc. An electrically driven hydraulic coupling ring expander is also located here and couplings from ¾-inch to 6-inch can be installed.

The hose depot requisitions and issues all house cleaning and housekeeping supplies used in the fire bureau. These are purchased from the city warehouse and delivered to the various stations upon monthly requisition from the station commanders. Constant experimentation is necessary to insure that the proper materials are being purchased and used.

The city furnishes all fire fighting clothes to the fire fighters. Repair and replacement of these garments is also the responsibility of the supply and hose depot.

A central gasoline storage tank is located here with fuel for cars and trucks assigned to fire headquarters and fire alarm. During multiple alarms, the division responds with extra breathing apparatus cylinders, gasoline for generators, saws, portable pumps, etc. Cellar pumps are available upon call from the depot. In addition, the supply division dispatches a tank truck from the department of public works to furnish gasoline for pumpers at extra-alarm fires.

In order to do its part in fostering good public relations, the hose depot often assists commercial and industrial firms as well as Monroe County fire departments in the solution of their problems concerning hose or other fire fighting appliances. While a relatively obscure part of the fire bureau, the supply and hose depot is an important factor in maintaining over-all excellence. □□

FCC Allocates 16 High-Band Fire Frequencies

The Federal Communications Commission in a "First report and order" in docket 13273, issued July 21, allocated a number of new channels in the public safety service. Among them were 16 channels in the 152-162 mc high-band and one low-band channel for use by the fire service.

Marked for "intersystem" fire radio assignment were 45.88 mc and 154.280 mc. Included in the allocation were 154.265 and 154.295 which were "reserved" and thus not available until November 1, 1963. The latter action facilitates use of the new intersystem channel without complex frequency coordination problems.

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Safeguard Your Men

Fire Departments in leading cities and towns throughout the United States are protecting their crews with reliable and dependable Rupert Safety Belts. Most manufacturers of fire equipment recommend Rupert Belts.

All Rupert Safety Belts are of heavy nylon, engineered for strength far beyond ordinary requirements. All belts have quick-release buckles. They are comfortable, do not hamper free movement — actually reduce fatigue.

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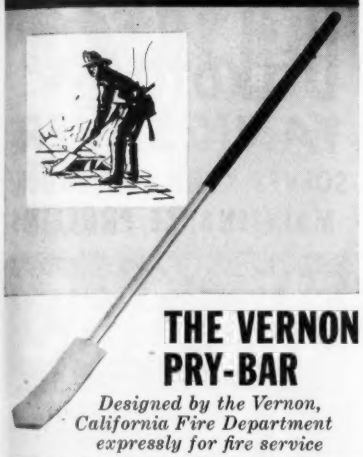

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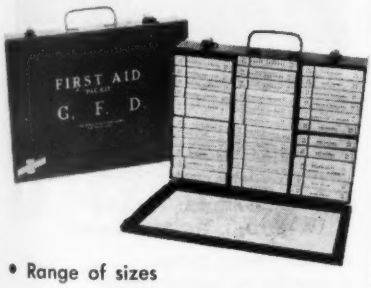

- Range of sizes
- Contents based on Fire Department requirements. Can be modified to suit any individual needs
- Heavy steel cases with baked-on red enamel finish, custom initialled
- Pac-Kit refills fit all other unit type kits

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Safety Equipment Co., Inc.
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RELOCATION PROGRAM

Continued from page 699

Our basic problem consisted of having too many companies improperly located for modern methods of fire fighting. Present locations would not be considered except for the headquarters station built in 1937, Main and Wisconsin station built in 1951, and Chestnut Street station which was under construction. The standards of the National Board of Fire Underwriters were used in determining the locations of proposed stations. These requirements are:

	Congested Area	*Residential Area*	*Scattered Area*
Pumpers	¾ mile	1½ miles	3 miles
Ladders	1 mile	2 miles	3 miles

In addition, 12 pumpers are to be located within 3 miles of congested high-value area.

The shape of the city's boundary, availability of land, street patterns and location of hospitals, bridges, schools and high-value areas were other items that had to be considered. Proposed sites were picked on a trial-and-error basis. Each location was mapped and actual running routes were measured. Colored overlays, conforming to required running limits were then prepared and used to denote the amount of overlapping coverage. This method also insured that no areas were outside the required distances.

It was soon apparent that it would not be necessary to increase the number of companies as had been suggested by the National Board if the existing companies were relocated. Actually, it would be possible to eliminate five pumper companies. The manpower from these companies could then be used to augment the remaining companies so that minimum manpower requirements of the National Board could be met.

Designed for dual companies

Many of the fire stations had been built to house single companies. It was decided, early in our planning, to build all new stations with enough space to house at least one pumper and one truck company. Adequate space would also be necessary on the apparatus floor for reserve vehicles. Adoption of this suggestion enabled us to follow a master plan for the building of most of the new stations.

The final plan suggested that the three houses previously mentioned be retained. Six other stations should be remodeled and nine new stations should be built. The following table

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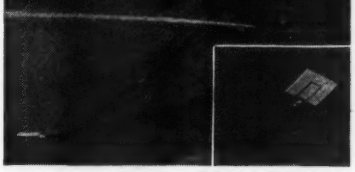

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will graphically describe the total change recommended:

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Total fire stations .	25	18	7
Total pumpers	25	20	5
Total aerial ladders	10	10	0

The committee proposed that the city council adopt this program and schedule the building of the stations over a period of 10 years. The fire bureau agreed to the immediate closing of the five pumper companies if this plan was adopted. It was necessary to carefully schedule the construction of the new stations so that the plan would receive Underwriters approval at each stage. The possibility always existed that the financial picture of a city may change and a change in administration might also interfere with this type of program.

We are happy to report that the program continues although delays have occurred. To date, one station has been remodeled and six new stations have been completed. Construction for another new station was scheduled to begin in July 1960.

These new stations are well lighted and completely air-conditioned. All are well landscaped and adequate parking facilities for the men's cars are provided. Modern kitchens with electric ranges, dishwashers and garbage disposal units are furnished. They are equipped with intercommunication systems so that only the necessary company is alerted. Although the lounges are more than adequate, a separate room is available for a library and study. Washing machines and dryers are furnished so that the firemen can launder their fatigue uniforms. While meeting the needs of the fire bureau and the standards of the National Board, another important factor not to be overlooked is the effect on company morale. □□

June Fire Losses

Estimated fire losses in the United States during June amounted to $82,829,000, the National Board of Fire Underwriters has reported.

According to Lewis A. Vincent, NBFU's general manager, this $82,829,000 loss represents an increase of 6.4 per cent over losses of $77,867,000 reported for June 1959, and a decrease of 4.7 per cent from losses of $86,940,000 for last May.

Losses for the first six months of 1960 now total $573,971,000, an increase of 2.3 per cent over the first six months of 1959, when they amounted to $560,866,000.

These estimated losses include an allowance for uninsured and unreported losses.

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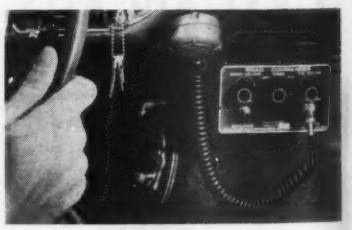

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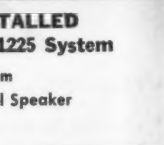

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A YARDSTICK FOR IMPROVEMENT

Continued from page 693

may be required because of unusual conditions within the city.

Radio installed on all apparatus and chiefs' cars in service, as well as on other special vehicles as may be determined by department operational requirements, is an important factor in promoting coordination between alarm headquarters and companies and between companies at the scene of an emergency. Each fire department should have its own fire radio system, as interference from other public agencies at the time of a fire or other emergency could be serious. The Federal Communications Commission has ruled that after October 31, 1963, no traffic other than official business of the using agency shall be carried on either fire or police frequencies. Suitable radio procedure should be set up.

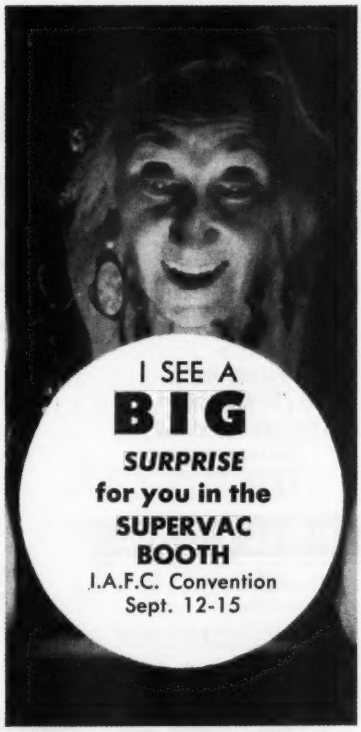
Fire apparatus must be maintained in the best of condition and be ready for emergency duty at all times; adequate repair shop facilities and competent personnel must be provided and a preventive maintenance program adopted, including the running of annual pumper tests from draft. Such tests are described in our booklet "Fire Department Pumper Tests and Fire Stream Tables." An alarm of fire or other emergency is no time to find out that repairs should have been made.

Operations

Each member of the department must know exactly what is expected of him, and the penalties for noncompliance. For this reason, complete department rules and regulations, printed and issued to each member, are necessary for the proper guidance of all concerned. Fair and impartial discipline can be obtained only if there is some standard for each man to follow.

How well personnel can use the tools that have been furnished depends upon the amount of training that has been given. Of course, suitable facilities must be provided, including a drill tower, a structure in which practice fires may be built and extinguished and ample yard space in an area where the use of smoke and water will not be restricted; the latter is very important. A qualified drillmaster, with assistants where needed, and a complete and active training program are necessities.

Except for the usual fire department practices and evolutions, no one training program will be completely satisfactory for all departments. Such programs must be developed to meet specific needs, and conditions that may be encountered, such as the



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handling of fires involving radioactive materials. Pre-fire planning, using data compiled by company members during building inspection work is essential. Administrative and leadership courses are important, but not to the exclusion of practical evolutions; one learns to do by doing. Good training is particularly important when companies are undermanned, as personnel must then work with utmost efficiency.

The response to alarms must be so arranged that sufficient engine and ladder companies will be in attendance at every fire, with provision for multiple and/or a number of simultaneous alarms, and covering areas left unprotected. The dispatching of only one engine company to a building fire is not satisfactory. It must be remembered that the extent or seriousness of a fire, and in some instances, exactly what is burning is not definitely known until the first company arrives at the scene, and the department must at all times expect the worst. It is a simple matter to return companies to quarters if not needed, when the units are radio-equipped.

The quality, extent and value of training is revealed during operations on the fire grounds under emergency conditions. The saving of life is of most importance at all times. Other operations should entail the use of modern fire methods in order to extinguish a fire quickly with the least possible damage to building and contents from smoke, heat and water. Full advantage should be taken of private fire protection facilities where provided, including sprinkler and stand-

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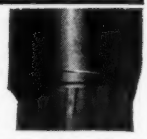

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pipe systems. Proper salvage practices can win many friends for a department, perhaps only by saving a trinket or picture with but sentimental value.

Records of all activities and personnel, if complete, well kept, and studied, are of considerable value to a department as a means for determining those areas where improvement is necessary; included are post-fire studies or critiques of large fires.

As can be readily understood, the elements of Organization, Equipment and Operations are interdependent upon one another; for example, what good is fine equipment if there are too few men to use it, or men are poorly trained? There should be some balance between these elements to have an effective force.

The National Board realizes that many desirable and necessary changes cannot be made without increased annual costs or a capital outlay. However, many improvements can be made at little or no cost, except time and effort, and every chief should make sure that these are done. The costlier projects generally cannot be undertaken all at one time and it is often necessary to complete one project, perhaps in stages, before starting another.

A chief should use, to the best of his ability, that which already is at hand, but continue to plan for the future. It is never too late to begin improvements, but remember, as someone once said, "Time holds all records for speed. If you don't think, if you don't do, if you don't get the thing done, you'll be passed by." □□

Milwaukee Plans Improvements

The Milwaukee Fire Department recently received bids for construction of its planned three-story headquarters building in the downtown civic center. The building, expected to cost almost $600,000, will house the administration and fire prevention bureaus. Upon its completion in 1961, two engine companies, a ladder company, a rescue squad, a high-pressure engine company and several chief's cars will also be stationed in the new quarters.

The department also plans to expand its marine fire fighting division. Fire Chief Edward McCabe recently said that, because of the Seaway, the city needs a new fireboat to cope with the increasing marine hazards. Help in drawing up specifications and plans for it will be sought from boat manufacturers and other fire departments. The new boat will be designed to go beyond the breakwater to help in rescue work on Lake Michigan and will have quarters aboard for the crew, rather than on land. Total cost is expected to exceed $500,000.

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Obituaries

Chief C. L. Downing

Charles L. Downing, 68, former chief and 34-year veteran of the Grand Junction, Colo., Fire Department, died June 18 in a Salida, Colo., hospital. He had been ill for several months.

Chief of department from 1931 until his retirement in 1954, he first joined the department in 1919. His service was interrupted briefly in 1943, when he lost an arm fighting an ammunition train fire.

J. B. Schuitemaker

Johann B. Schuitemaker, retired chief of the Amsterdam, Holland, Fire Department, died April 30, following a short illness.

Norris T. Morton

Chief E. B. Wright

Edward B. Wright, 57, chief of the Wrightsboro Volunteer Fire Department, New Hanover County, N. C., died of a heart attack on the afternoon of July 9, while directing his department at a dwelling fire. He had headed the department for the past five years.

Chief Wright was an organizer of the New Hanover County Firemen's Association and was widely known for his fire prevention and protection activities. At the time of his death he was serving as secretary of the county fire inspection committee.

C. F. Meyer

Rev. J. B. Myers

The Reverend J. Benjamin Myers, 82, chaplain of the Mid-Hudson-Harlem Valley Fire Chiefs Association and the Hudson Valley Volunteer Firemen's Association for many years and retired rector of Trinity Episcopal Church, Fishkill, N. Y., died May 6 in Vassar Hospital, Poughkeepsie. Chaplain Myers practiced law in Ohio for some years before entering the ministry in 1909 in Cincinnati. He served in parishes in Ohio, New Jersey and New York City before accepting a call to Fishkill in 1937.

Stuart L. Gates

Mark Rosenthal

Former Chief Mark Rosenthal, 77, past president and honorary life director of the Hudson Valley Volunteer Firemen's Association died May 16. A resident of Hudson, N. Y., he began his service as a fireman in 1912 as a member of the Edwards Hose Co. No. 1 and progressed through all ranks and offices during his career. Active in fire fighting organizations throughout his life he helped organize the Columbia County Volunteer Firemen's Association and served as its secretary for 15 years. He also served for some years as a director of the Columbia County Fire Chiefs Association.

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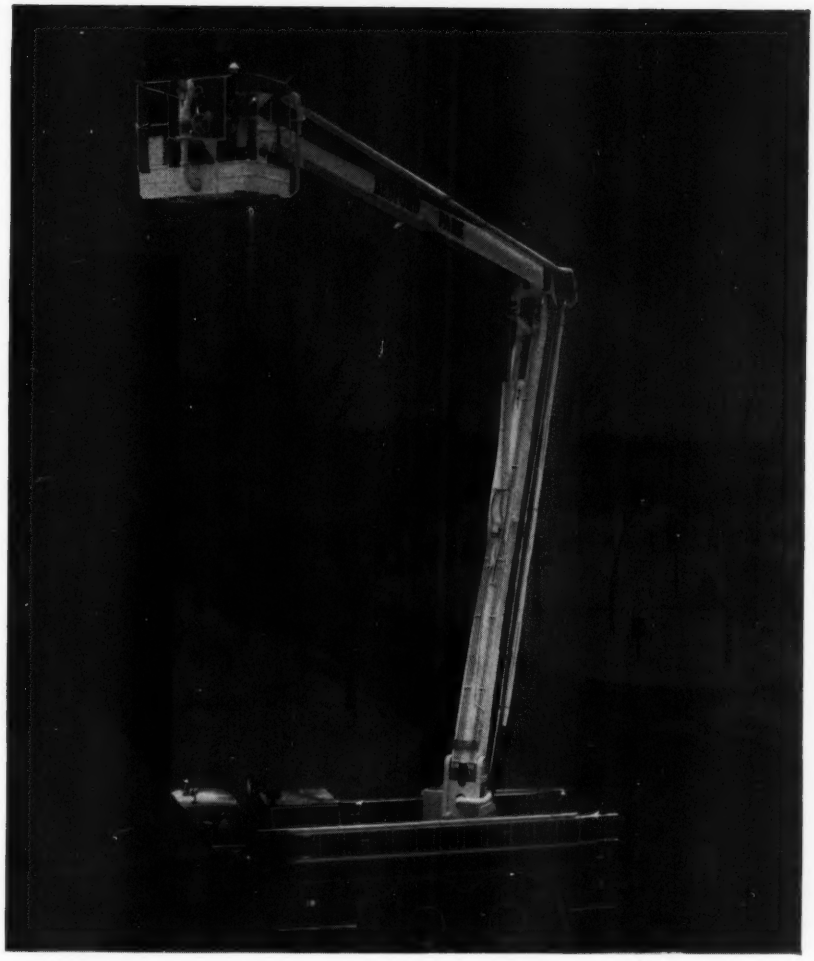
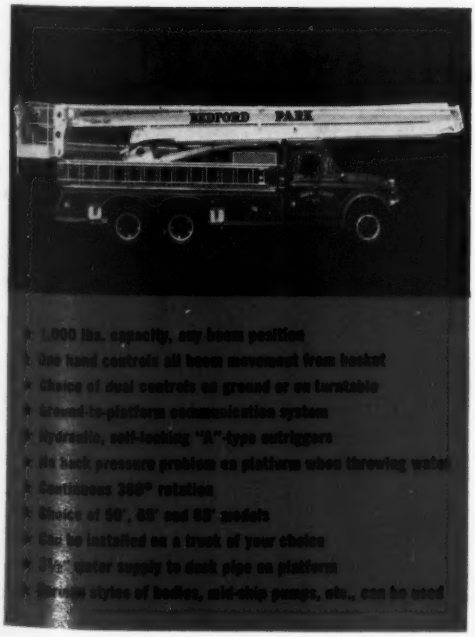


65-foot PITMAN SNORKEL



Incorporated in the Village of Bedford Park, Illinois, are a number of major industrial installations. Vast tank farms nearby store everything from benzine to molasses. Chief Gil Husch and his 18-man department have fought fire there—as well as in buildings of four or five stories—under very hazardous conditions.

"We need the reach of that seven-story Snorkel," says Chief Husch. "It puts our men up high—or way back in, over low-rise structures, to lay fog and water right at the source of fire . . . no matter where it is.

"Our men are volunteers, and good ones," Husch asserts, "but they're also my friends and neighbors. I want to make sure they get back in good shape—every time." When Chief Husch saw the Chicago Fire Department's Snorkel No. 1 in action, he knew Bedford Park had to have one as well!

Bedford Park's Snorkel is mounted on a GMC Model W554 chassis, with compartment and ladder body. Chief Husch preferred a tandem truck, though a single axle chassis works equally well. Rather than a full complement of ground ladders, this unit carries a 35-foot 3-section aluminum ladder, a 24-foot 2-section aluminum ladder, and two 16-foot roof ladders. Wheelbase is 176 inches, with an over-all length of 37 feet. Over-all height is under 11 feet, with booms stowed for travel. A Pitman Snorkel—50, 65 or 85 feet tall—can be tailored to *your* community's needs. For full details, write . . .

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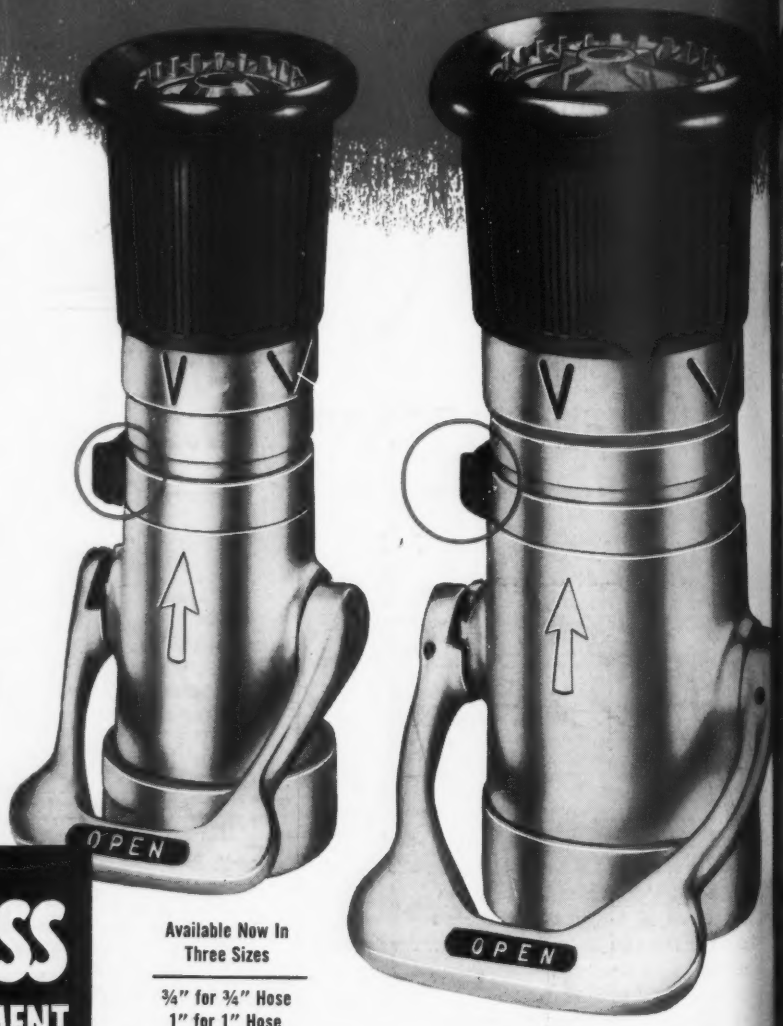

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